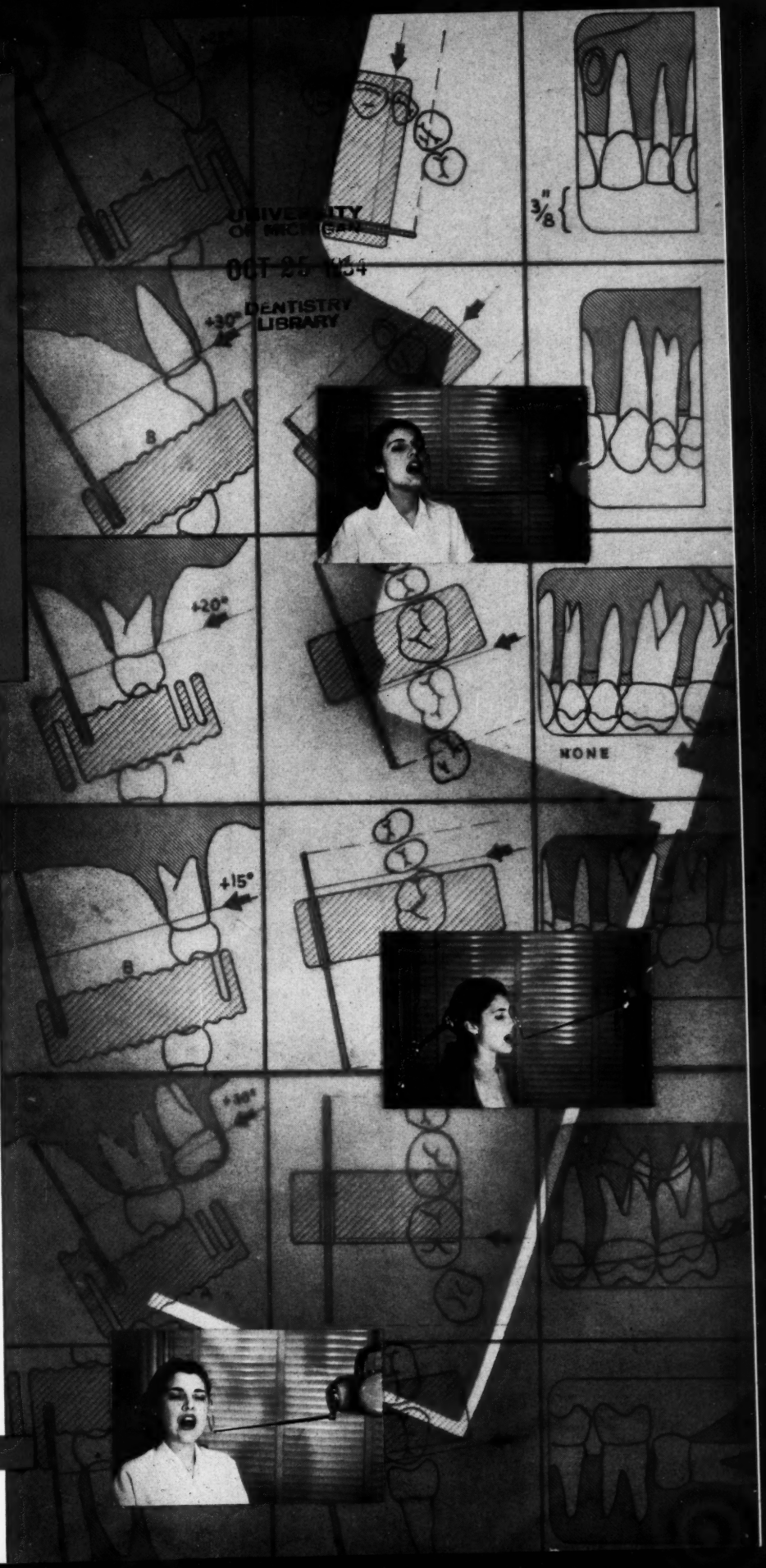
Dental Digest



October 1954

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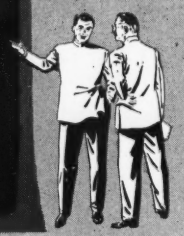

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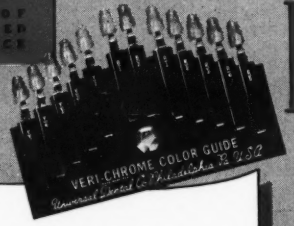

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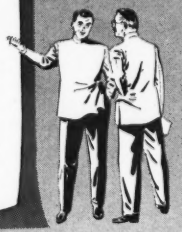

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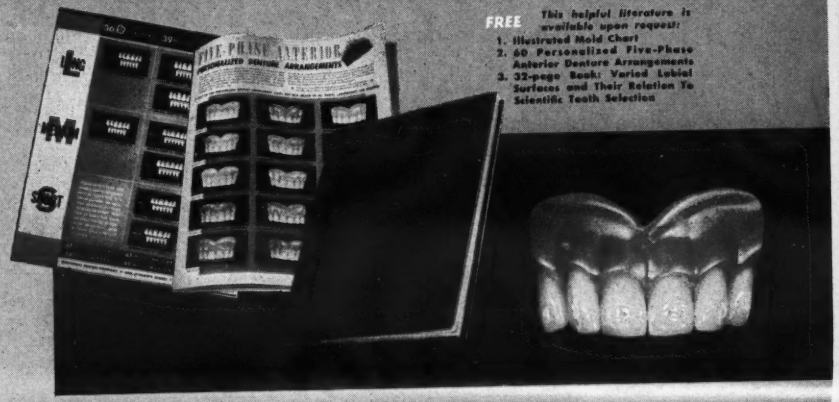

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About Our CONTRIBUTORS

JACK PERLOW, B.S. (City College of New York, 1933), D.D.S. (New York University, College of Dentistry, 1937) is an orthodontist who has been a contributor to DIGEST since 1940. This month Doctor Perlow gives step-by-step directions for the construction of a cephalometer, A PORTABLE CEPHALOMETER FOR GENERAL DENTISTRY.

JACK F. CATHCART, D.D.S. (University of California, College of Dentistry, 1926) who is a frequent contributor to DIGEST tells us that he was introduced to dentistry through his father's laboratory where he started as an errand boy, finally opening his own laboratory where he specialized in jacket crowns and bridge construction. In his practice he emphasizes prosthetic dentistry. His present article is SURVEY PROSTHETIC PROCEDURES.

J. RAYMOND FRITZ, Dr. Med. Dent. (University of Heidelberg, 1925), D.M.D. (Tufts College Dental School, 1945) is a general practitioner. Doctor Fritz was formerly on the teaching staff of Tufts College Dental School and has also conducted clinic demonstrations. The material in his article, CARBON DIOXIDE ANESTHESIA OF THE DENTIN IN CAVITY PREPARATION, was read at the 87th Annual Dental Meeting of the Connecticut State Dental Association, May, 1952, and was presented at the 93rd Annual Session of the American Dental Association, September, 1952.

DONALD W. MCCORMACK, B.S. (University of California, 1934), D.D.S. (University of California, College of Dentistry, 1936) formerly associate professor of oral roentgenology and oral surgery at the Medical College of Virginia, School of Dentistry, Richmond, Virginia, has published several articles on this subject. Doctor McCormack's current presentation is INTRAORAL ROENTGENOLOGY.

EDWARD J. RYAN, B.S., D.D.S., Editor
WANDA T. PICKARD, B.A., Assistant Editor
708 Church Street, Evanston, Illinois

A PORTABLE CEPHALOMETER

for General Dentistry

JACK PERLOW, B.S., D.D.S., Brooklyn, New York

DIGEST

For many years cephalometrics has been employed in orthodontics, pediatrics, anthropology and related fields which require accurate measurement of the head. Cephalometrics has made significant contributions (1) to the study of growth and development of the face and head, (2) diagnostic criteria for orthodontics, (3) functional analysis of the bite, (4) studies of racial genealogy, and (5) to studies of relationships between man and existing primates and other mammals. Although innumerable articles have been written on the subject, information for the general dentist has seemingly been neglected. The orthodontic clinician has made excellent use of cephalometrics and there is no reason why the dentist should not also avail himself of this adjunct.

A portable cephalometer is available for the general practitioner at a nominal cost. If he decides to make it himself the cost should be about $20. If he submits the simple plans to a machinist the expense should be no more than $100. No additional chair-room, sighting devices, or 30-milliampere x-ray machine is necessary.

Value to the Dentist

Cephalometrics or head measurements can be useful and of great help to the dentist. In the dental literature on mouth rehabilitation, full denture, and partial denture prosthesis little is said about the employment of the profile x-ray for checking the vertical dimension and the rest position, or establishing the path of closure to determine if it is normal or abnormal. The importance of bite analysis in diagnosis and treatment has been ably presented by Thompson[1] in his valuable article. Thompson has opened a broad new field for diagnostic endeavors and treatment planning. It remains for the dentist to accept and utilize this knowledge.

Derivation of Term—The word cephalometrics is derived from two Greek words, cephale, meaning head, and metron, meaning measure. Thus, the term literally means the science of head measurement. Cephalometrics can apply to x-ray, models, photographs, or direct measurement on the head, using various anthropometric points after the methods of Hellman,[2] and Hrdlicka.[3] Cephalometric models, and cephalometric photographs are provided. This discussion will apply to roentgenographic cephalometrics exclusively.

Device for Immobilization of Head—Cephalometer is synonymous with cephalostat, head positioner, or head holder, and is a device which enables the patient's head to be immobilized in the desired position with relation to the film and tube with the distance between the film, the patient, and the tube always being constant. It is thus referred to as a standardized or oriented film.

Uncommon in the Dental Office—Why has the application of the cephalometer to the dental office been uncommon? The answer is undoubtedly cost plus the knowledge necessary to master the technique which is believed to be beyond the average operator's capacity. This is completely fallacious. The dentist has all the knowledge and skill which he acquired in dental school and application of this knowledge requires only study and effort on his part.

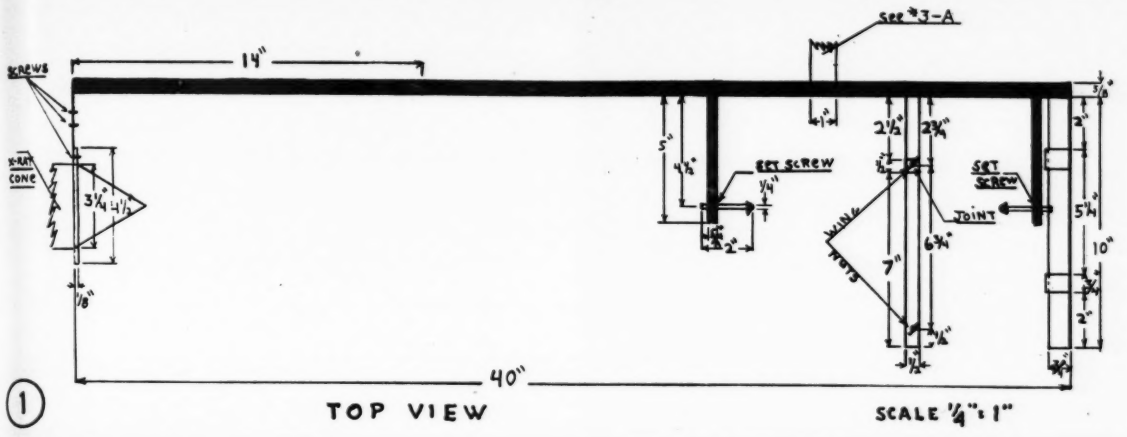
Extra Adjuncts Unnecessary—In an informative article on the subject it was stated that a cephalometer of a standard design ($600-$700), a 30-milliampere machine, a special room with a dental chair and even a trained roentgenologist were employed. These adjuncts are entirely beyond the means of the average practitioner and are not necessary.

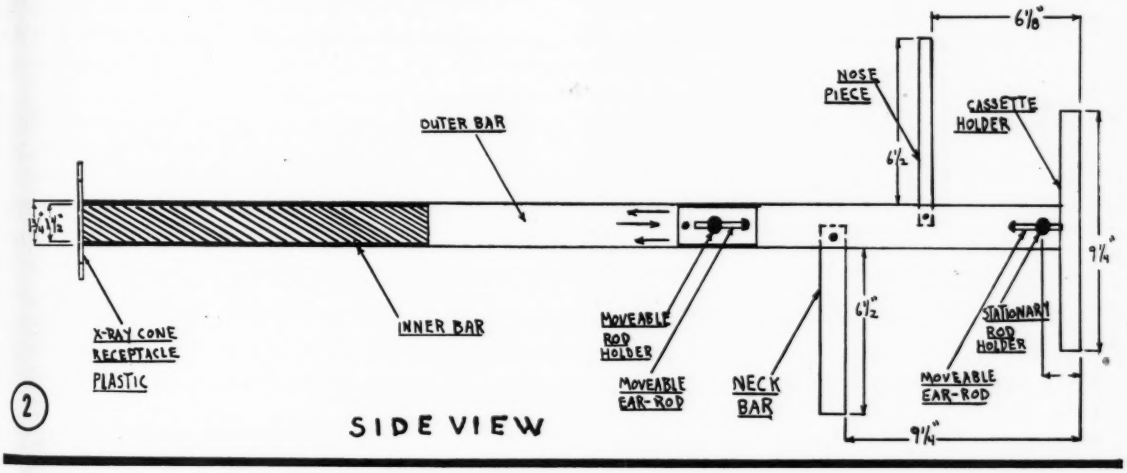
Portable Cephalostat Needed—About two years ago the author opened an additional office in his suburban home. Because of the lack of space a cephalostat was needed that would be portable, that could be attached to the dental chair, and removed when not in use. As there were none commercially available it was believed that one might be constructed, as a satisfactory wall type cephalostat had previously been made for another office.

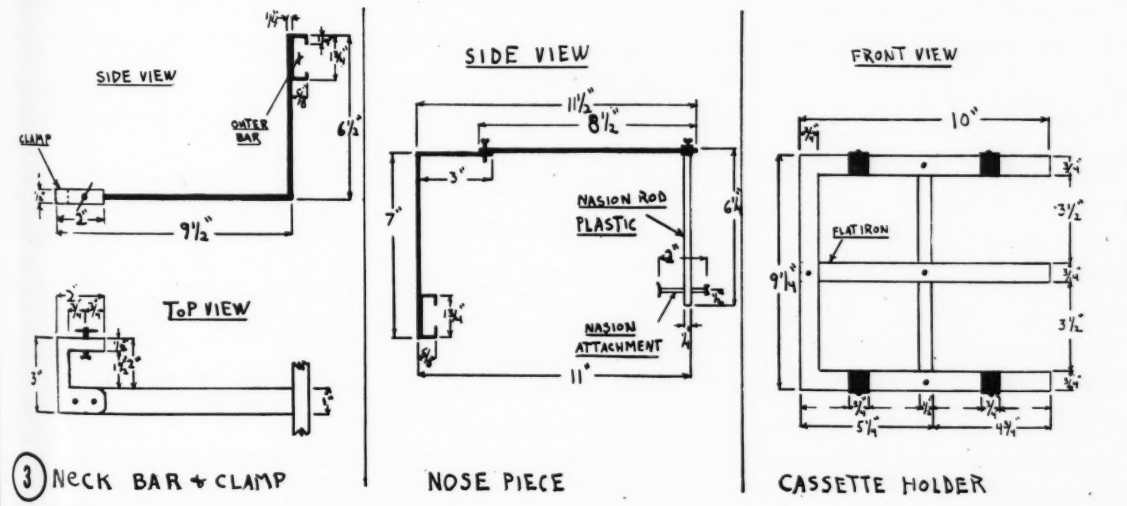
[1]Thompson, John R.: The Rest Position of the Mandible and Its Significance to Dental Science, JADA **33**:151-180 (February) 1946.

[2]Hellman, M.: The Face in Its Developmental Career, Dental Cosmos **77**:685-699, 1935.

[3]Hrdlicka, A.: Anthropometry, Philadelphia, Wistar Institute of Anatomy and Biology, 1920.







1. *Diagram showing the top view of the cephalometer.*

2. *Diagram showing side view of the cephalometer.*

3. *Diagram showing neck bar, nose-piece, and cassette holder.*

Specifications Outlined for Portable Cephalostat

The following list of specifications for the portable cephalostat constructed were determined:

1. The device should be clamped on the back of the dental chair using the neck of the headrest for attachment by means of a steel clamp.

(Only a steel clamp could withstand pressure. Cast iron clamps were unsuitable.) The headrest neck could easily adjust to *any* patient.

2. A mobile type standard 10-milliampere x-ray machine should be moved into position to take the profile picture.

3. It was highly important that accuracy be obtained by fixing the head at the external auditory openings so that no unnecessary movement was possible. X-ray plates should show superimposition of the ear rods and have a round white circle or a small black hole when the rods used were hollow.

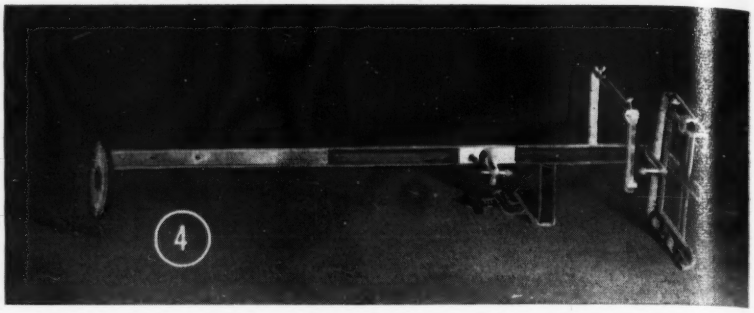
4. When not in use the device should be removed from the room and stored in a convenient closet.

5. The cephalostat can be used for camera mounting to ensure proper photographic recordings.

Home Construction Possible—Observing an Allison measuring rod (heavy duty type) which is employed in pediatrics for measuring the length of babies, it occurred to the author that with some modifications a portable cephalostat could be constructed.

Construction of the Cephalostat

The Allison measuring rod is 40 inches long, 1 3/4 inches wide, 5/8 inch thick, and molded from 1/16-inch sheet steel. The rod itself is hollow and has an inner bar which can slide in and out. This inner bar is 24 inches long and has several spring clips on its inner aspect hugging the main bar, thus preventing slack. Holding the rod and facing the inner bar, at both ends there is a piece of flat iron 10 inches long, 1 inch wide and 1/8 inch thick. These pieces are both attached by a movable swivel joint. The piece on the right is attached to the main or outer bar or the rod itself. The left piece is attached to the inner bar which slides in and out.



4. ***Close-up of the cephalometer.***

Materials Required—The following materials, obtained in a surplus store or building supply store, are required:

(1) Aluminum rods and strips
(2) Lucite rods, rectangular and round
(3) A piece of flat lucite shaped like a doughnut
(4) A piece of flat iron
(5) A good steel clamp

Tools Required—A small portable drill and a standard tap which was 1/8 inch with machine screws to fit the taps where needed.

Procedure—The following are the steps taken in the construction of the cephalostat:

1. Study diagrams for dimensions (Figs. 1, 2, and 3). On the right side the flat piece of iron which is attached to the outer or main bar (10 x 1 x 18 inches) is fixed and made immovable by drilling a 1/8-inch hole into which are placed a machine screw and hexagonal nut. The iron piece on the left side is cut down to 3 inches with a hack saw and fixed in the same way as that on the right.

2. The remaining steps in the procedure are the construction of the following:

(A) Cassette holder
(B) Nosepiece
(C) Neck bar
(D) Ear rod holders and ear rods
(E) X-ray cone receptacle

Completion of Cephalostat

Cassette Holder—1. This holder receives the 8 by 10-inch x-ray cassette. It is made from 1 1/2 inch x 1/16-inch aluminum strip. It is preferable to have the cassette set up so that the longest part is horizontal.

2. The stripping needed is about 3 feet long and bent into right angles over the edges of the cassette, which is used as a form, by gentle hammering.

3. The edges are either riveted together or joined by tapping with fine screws.

4. Straps are placed conveniently to hold the cassette in place.

5. This frame is reinforced by a strip 9 1/4 x 1/4 x 1/2 inch and attached as shown in Figure 3.

6. When completed the frame is attached to the piece of 10-inch iron on the right side. It is in the center of the frame with two screws and nuts (Fig. 3).

Nosepiece — An aluminum strip, 1/4 x 1/2 inch is attached to the back of the main bar with two 1/8-inch screws (countersunk). It is made large enough to clear any head size. The nosepiece comes in two parts which can turn sideways for adjustment. It is exactly 5 3/8 inches from the cassette holder (Fig. 3).

Neck Bar—1. A piece of flat iron bar 15 inches long, 1 inch wide, and 1/8 inch thick is bent into a right angle or can be made in two parts and attached by drilling with screws if there are no means of bending it.

2. The bar is attached to the outer bar 8 1/2 inches from the cassette holder by two screws and nuts.

3. At the end of the horizontal part of the neck bar two holes are drilled;

this is also done on the steel C clamp. This clamp is made slightly concave on the end where two similar holes are drilled for attachment to the neck bar.

4. The clamp has a quarter-inch thread to fit the clamp screw and the center is three quarters of an inch from the inner side. The diameter of the C clamp is 2 inches. At the end of the screw clamp is a concave swivel round piece of steel 1/8 inch thick, which will adequately grip the headrest neck without slipping or niching (Fig. 3).

Ear Rod Holder and Ear Rods—The ear rod holders are two pieces of round lucite 4 1/2 inches long and 5/8 inch in diameter. The one on the right is fixed and one inch away from the cassette holder. This is the first rod, or the rod designated as Number 1. The one on the left is on the sliding attachment and is not fixed. It can be slid up and down the main bar; this is the Number 2 rod.

Lucite Rods Prepared—1. Quarter-inch holes are carefully drilled 3/8 inch from the ends. These holes must be carefully made. The lucite is kept cool with water to avoid softening the plastic.

2. At the opposite ends of the lucite rods 3/8-inch holes are drilled to 1/2 inch in depth at the tips. Here accuracy is not important.

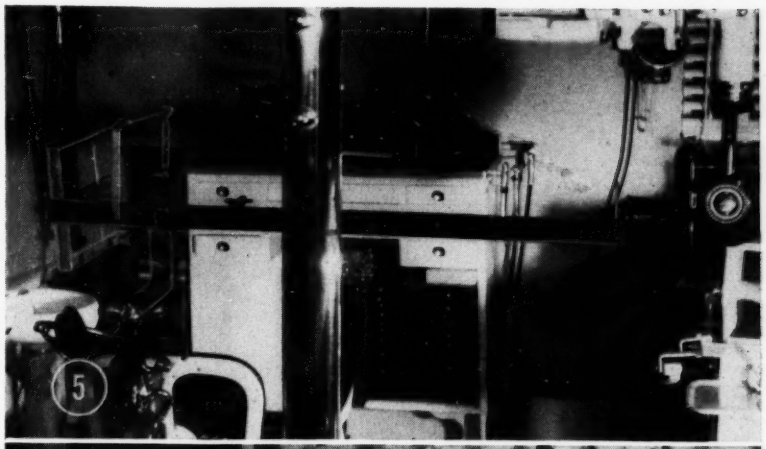
3. For the Number 1 rod a quarter-inch hole is drilled 1 inch away from the cassette holder and in the exact center.

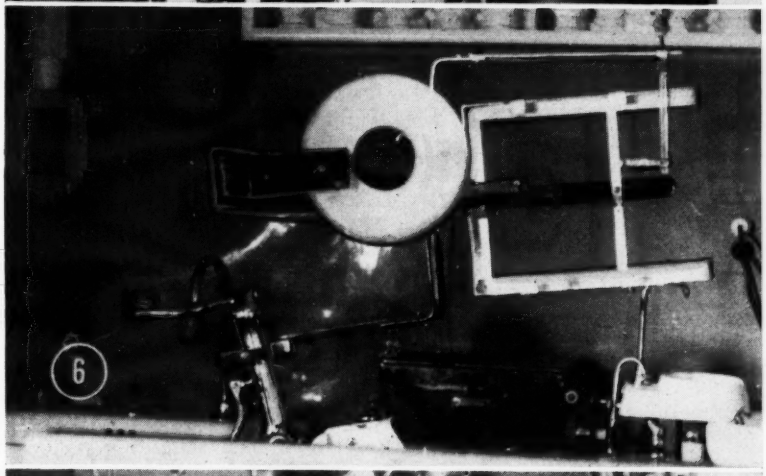
4. For the Number 2 holder on the 4 1/2-inch sliding attachment in the center another quarter-inch hole is made. Two quarter-inch screws slightly more than 1/2 inch long are placed in the Number 1 and Number 2 holders.

5. These screws are fixed on the inner aspect with thin hexagonal nuts.

6. The Number 2 sliding attachment is placed back by sliding it into the main arch and brought up to about 3 inches to the Number 1 screw.

7. A six-inch piece of quarter-inch aluminum rod is placed through both lucite rods where the quarter-inch holes were made. This will serve as a positioning jig to line up both rod

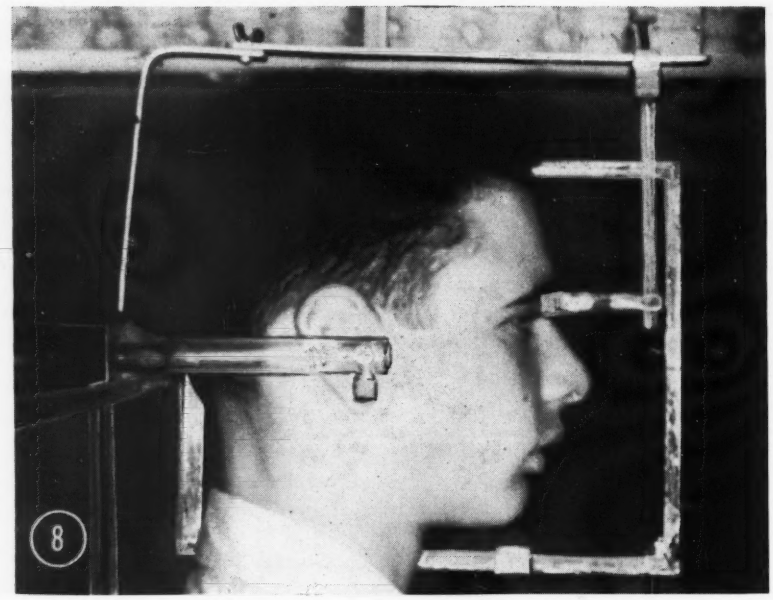




5. ***Showing the cephalometer set-up with the x-ray cone in position. The cone is at 0 position and the base of the x-ray head is parallel to the flat surface of the x-ray cone receptacle.***

6. ***Close-up view of the cephalometer. Note how the headrest is placed and locked into position. Note the clamp that supports the complete assembly.***

7. ***Showing the patient with the cephalometer in position. Note parallelism. This whole arrangement takes no more than two minutes.***



8. ***Close-up view of the patient. This is an oriented profile photograph taken after the x-ray is pushed out of position. The lens of the camera is inserted into cone receptacle and the picture is snapped.***

holders accurately so that the quarter-inch holes are centered perfectly.

8. An amount of quick setting acrylic is mixed and a sufficient quantity is placed over the Number 1 and Number 2 screws. The lucite rods are then forced over the acrylic and held in position using the six-inch aluminum rod as a jig. A sufficient amount of acrylic is evenly mounded around the ends for additional strength.

Sliding Attachment—By means of fast setting acrylic accurate placing of the quarter-inch holes has been obtained. The sliding attachment which carries the Number 2 ear rod holder can be slid up and down on the 40-inch length of the outer bar and still the holes are centered.

Ear Rods—1. The ear rods are made from the six-inch quarter-inch piece of aluminum rod. They are cut to 2-inch pieces.

2. The ends that will go into the ear holes of the patient are nicked or grooved; they are then covered and shaped with fast setting clear acrylic.

3. The ear rods are controlled by lock nuts by tapping into the quarter-inch holes at right angles. One-eighth-inch screws are used; the knobs are made of fast setting acrylic.

4. The Number 2 ear rod holder which is on the sliding attachment is tapped for lock nuts. This knob is also formed from acrylic as are all other knobs at the ends of screw heads wherever lock nuts are used (Figs. 1 and 2).

X-ray Cone Receptacle—The final step is to mount a round flat piece of lucite so that the center part of this doughnut-shaped piece is exactly in line with the two ear rods. This is also on a sliding attachment 14 inches long and is easily centered by measuring with a tape. The x-ray cone is lined up in the center of the hole of the receptacle and is centered to the two ear rods. Fast setting acrylic has substituted for a precision lathe (Figs. 1 and 2).

Cost Minimal—A study of the plans and photographs should enable the operator to construct this cephalometer for about $20. If these plans are shown to a machinist it should be no more than $100. The dentist is now ready to make use of this device (Figs. 4, 5, and 6). Successful lateral x-rays are obtained which are oriented and can be taken from time to time for study and comparison.

Advantages

The dentist will appreciate the vastly superior x-ray plate that is obtained with the use of the head positioner. Without fixing the machine properly for an exposure, which is about three seconds, movement is certain to occur.

Details Shown—Many abnormalities are clearly shown and cover areas beyond purely dental aspects. In addition to impactions (1) congenital absence of teeth and supernumerary teeth are shown, (2) the headplate by virtue of the constant direction of the central ray perpendicular to the mid-saggital plane gives a truer picture of the inclination of unerupted teeth and the space available for these teeth in the arch; and (3) an accurate outline of the soft tissues of the nose and lips are discernible in relationship to the bony structures.

Aid in Denture Construction—The most salient manner in which the instructions described can be applied is in the determination of the occlusal vertical dimension and the mandibular rest position. This knowledge can be of great aid in full denture, partial denture, and multiple bridge construction both in diagnosis and treatment.

Application—Emphasizing the importance of the cephalostat in proper treatment, Thompson[1] has shown that where the occlusal vertical dimension has been increased by full dentures to a point beyond the rest position two apparent conditions were present in these patients:

(1) They required more adjustments and where this opening was excessive resorption of supporting bone resulted.

(2) Where the vertical dimension was insufficient there was too much freeway space.

(3) There was loss of functional efficiency because the muscles of mastication lose their power as they close beyond their normal occlusal level.

Freeway Space Conserved — The conclusions stated have been found by Thompson to apply to partial dentures and full mouth reconstruction.

The freeway space which is a positive difference between the occlusal vertical dimension and the rest position and is about 2 to 3 millimeters must not be encroached upon.

Diagnosis and Treatment—When records by this method have become routine technique further application can be made in bite analysis for diagnosis and treatment of temporomandibular conditions.

Roentgenographic Method for Determination of Mandibular Rest Position

Technique—1. The portable cephalostat is securely locked with a steel clamp at the neck of the headrest, just above the handle that controls the locking of the headrest.

2. By adjusting this handle the cephalostat is brought parallel to the floor and then locked into position. As this is done the two headrest pads are placed out of the way.

3. Below the headrest there is a handle which permits it to be moved up or down. The patient is now seated and by moving this handle and checking for height with the Number 1 ear rod it is possible to ensure that it is exactly level. The rod is inserted in the external auditory openings.

4. The Number 2 ear rod is slid into the other auditory meatus and locked with the lock nut on the sliding attachment.

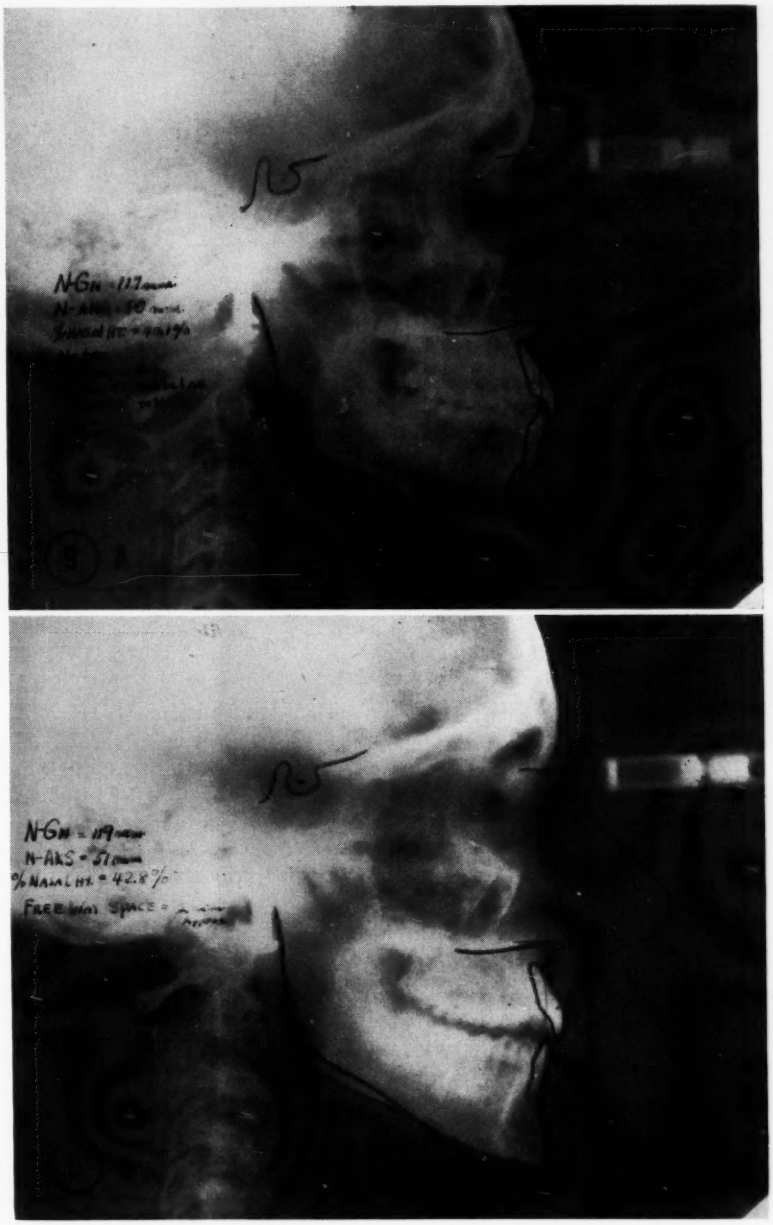
5. For closer insertion into the ear opening the ear rod is released by the lock nut on the lucite rod, pushed in a little more, and then locked.

6. The x-ray apparatus is now wheeled into position and the cone of the x-ray is placed into the hold of the plastic receptacle.

7. The head of the x-ray is placed at 0 degrees and the front surface is exactly parallel to the flat surface of the receptacle (Figs. 7 and 8).

8. The target distance is 47 inches, x-ray source or focus to film. X-ray source to median plane is 42 1/2 inches. This dimension is kept constant.

9. Cassettes are 8 x 10 inches with high definition screens; a 3-second exposure with the 10-milliampere x-ray will give satisfactory results. At this distance there is a 10 per cent enlargement. This need cause no concern as absolute measurements are not necessary. The images will be proportional to the distances at which they are made and only necessary to reduce the measurements in proportion. The method is simple and follows Thompson's directions.



9A. ***Showing the profile plate in centric position, the mandibular teeth making complete contact with the maxillary teeth.***
9B. ***The mandible in rest position. Note freeway space.***

Determination of the Rest Position—1. After tracing the headplate on a good grade of tracing paper, a line is drawn from the frontonasal suture (N) to the chin point (Gn). This is the most outward and everted point on the profile curvature of the symphysis of the mandible.

(*Continued on page* 453)

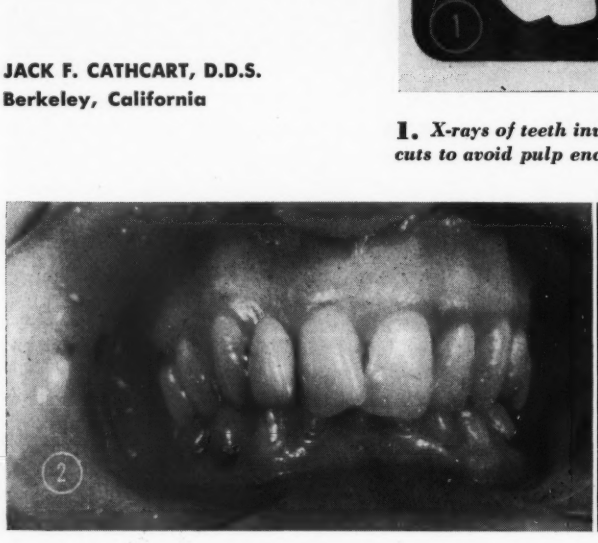
Survey

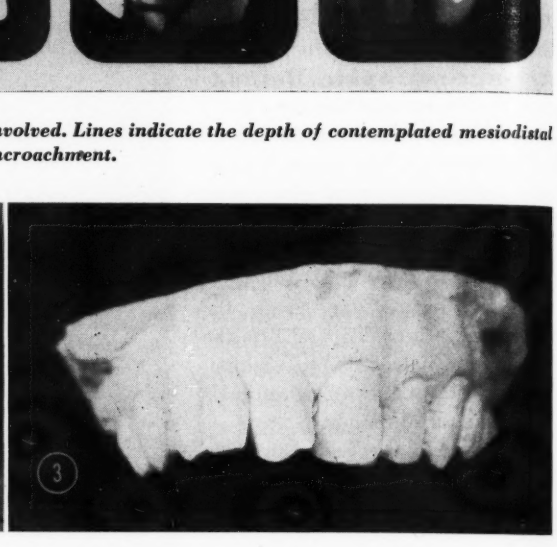
PROSTHETIC

Procedures

JACK F. CATHCART, D.D.S.
Berkeley, California

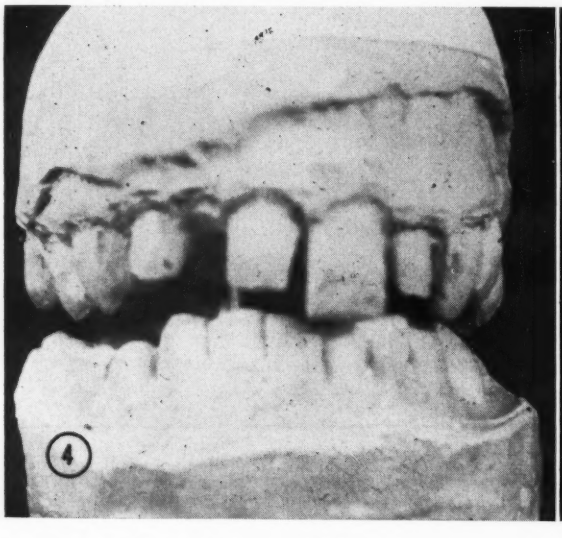
1. *X-rays of teeth involved. Lines indicate the depth of contemplated mesiodistal cuts to avoid pulp encroachment.*

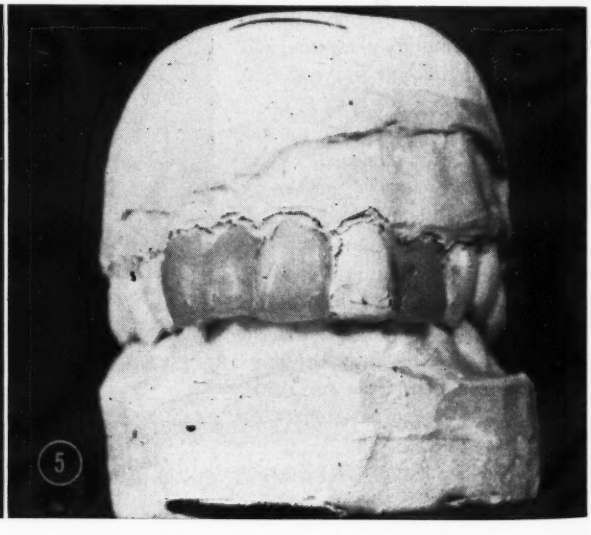




2. *Case as presented. Treatment planned: Full veneer acrylic bridge from cuspid to central incisor, with acrylic veneer crown on the opposite lateral incisor to round out the contour of the arch.*

3. *Preliminary study cast.*





4. *An articulated study cast with the contemplated preparations made on the study cast. Preparations made on this cast together with study of the x-rays allow the operator to ascertain if the bridge abutment walls can be paralleled. The rotated central incisor is corrected for a conventional abutment and lingual clearance is made without pulp encroachment.*

5. *Finished shape carved in wax on study model. This step allows the operator to determine if the esthetics of the finished bridge will be of proper shape and proportion; if there is room for a sufficient amount of material on the lingual, and also to show the patient how the finished case will look and function.*

DIGEST

The reason "why" should always precede the question of "how" in planning a prosethetic replacement. Once a definite "why" with its logical sequence is established for a prosthetic replacement, "how" it is to be accomplished may be one of many different methods or types of replacements which will achieve the desired result. This article illustrates the steps in the successful completion of a dental problem approached in this way.

Treatment Planned in Advance

To ensure the best result, a careful survey and plan of treatment in any difficult case should first be worked out on casts of the patient's mouth before an attempt is made actually to proceed with the technique. Laboratory technicians often complain that they are asked to make bridges or crowns where the abutments are not parallel or the lingual clearance is not sufficient for them to work out a satisfactory replacement. Such a situation clearly indicates that little or no preliminary study of the case has been made by the dentist.

Patient's Confidence Improved

By making a preliminary survey of the prosthetic steps required, then using casts of the mouth, to show preparations of the teeth, in addition to a careful x-ray study of the teeth concerned, the actual procedure in the mouth will not only be hastened, but the patient's confidence will be increased. The patient not only realizes that his dentist is making certain that his work is well thought out in advance but is, also, visually shown what the final outcome is to be esthetically and functionally. Patient reaction to this extra time and effort expended by the dentist has often been the determining factor for justifying the prosthetic appliance which the dentist wishes to make.

701 *American Trust Building.*

6. *Actual procedure on the patient begun; old bridge removed.*

7. *Preparations made on the teeth involved; full crown preparations on the central and cuspid; acrylic crown preparation on the lateral. Preparations made in the patient's mouth are completed faster and easier due to previous model cut-down survey. Compare with Figure 4.*

8. *Finished restoration cemented to place. This was done by the direct-indirect technique. The carving of both the bridge and acrylic crown were done in the patient's mouth (direct technique) after a preliminary wax-up on cement dies (indirect technique). The lingual surface and incisal length were formed in the wax-up by the patient's incisal movements.*

9. *The completed case in comparison to the condition that existed previously. See Figure 2.*

CARBON DIOXIDE ANESTHESIA

of the Dentin in Cavity Preparation

Part I

J. RAYMOND FRITZ, D.M.D., Hartford, Connecticut

DIGEST

For many years the dental profession has studied the problem of pain and its control in cavity preparation and, in particular, methods of desensitizing hypersensitive dentin.

Fear of pain and sensitiveness to pain have caused many patients to harbor an attitude of dread and antagonism toward dental procedures and for this reason to avoid them except when impelled by necessity.

To reduce or to eliminate pain experienced in dental procedures is the goal of every conscientious dentist. This article describes an apparatus, the WaRoPa, a precision-engineered instrument which anesthetizes by carbon dioxide. Invented by a European, the apparatus is used by and recommended by European authorities.

Two Theories of Pain-Conduction in the Dentin

Exposed dentin of a vital tooth is responsive in varying degrees to mechanical, thermal, or chemical irritation. Evidences of irritability strongly indicate the presence of nerve tissue. As no proof of the existence of sensory nerve fibers in the dentinal tubules has been established definitely, the transmission of stimuli by other structures than by a derivative of ectoderm must be considered. For almost a century this problem has been one of the most perplexing enigmas of dental research.

Transmission of Local Stimuli—Nerve tissue is not the only means which can transmit local stimuli to remote parts of the body: (1) All protoplasm has this property; (2) the endocrine glands secrete hormones which are transported through the blood stream and call forth reactions in tissues far removed from their source; (3) there is evidence that protoplasmic processes; namely, Tomes' fibrils of the odontoblasts, are the prime factors concerned with the transmission of stimuli in the dentin.

Opposing Theories—Modern histologists have proposed two diametrically opposed theories: A. One theory asserts that there are nerve fibers present in the dentinal tubules. B. The other states that the sensitiveness of dentin is due to the protoplasmic processes of the odontoblasts.

Innervation Hypothesis: Among the proponents of the innervation hypothesis are Boll,[2,24] Dependorf,[2,8] Romer,[2,41] Fritsch,[2] Morgenstern,[2,34] Turkheim,[51] Mummery,[2,35] Tovoda.[2,49]

Boll had the distinction in 1868 of being the first histologist to report on nerve fibers in the dentin.

Toyoda through photomicrographic methods has convinced many histologists that nonmedullated nerve fibers, arising from the plexus of Raschkow, branching dichotomously, can be seen between the odontoblasts.

Noninnervation Hypothesis: The advocates of the noninnervation hypothesis include Tomes,[5,48] Walkhoff,[2,55] Black,[2,4,26] Gysi,[2,16,26] and Prinz.[39]

Many investigators believe that there are nonmedullated nerve fibers present in the tubules, but histologic considerations have opposed the definite and conclusive proof of their existence. Paramount among the difficulties is the lack of a specific stain for nerve fibrils. Other handicaps include the density of dentin, its great affinity for stains, and the minute size that nerve fibrils, if present, would possess in the tubules.

Nerve Fibers in Canals and Pulp—The majority of investigators state that bundles of myelinated nerve fibers enter the pulp. The pulp likewise contains a few nonmyelinated nerves, which supply the smooth muscles of the pulpal arterioles. Magitot[29] believes that the nerves of the pulp become continuous with a layer of reticulate cells lying beneath the odontoblasts, thereby affording a direct linkage between the dentinal fibril and the pulp nerves.

Nerve Fibers in the Dentin—Mummery, one of the foremost advocates of the presence of nerve fibers in the dentin, claims that the nerve fibers of the pulp pass between the odontoblasts forming a marginal plexus from which they extend as nonmedullated fibers into the dentinal tubules, accompanying the dentinal fibrils to their termination beneath the enamel or cementum. Downs and Goss[10] state that they could show nonmyelinated nerve fibers in the tubules and could trace them from their arborization

around the odontoblasts into the tubules as far as the dentinal-enamel junction where the sensitivity is greatest. Romer calls the enamel spindles the region of termination of the nerve fibers.

Basis for Theory—The proponents of Tomes' theory base their hypothesis on a lack, rather than a presence of evidence. No one denies the fact that there are manifestations of pain arising from the dentin. Conclusive evidence is lacking as to the presence of nerve fibers in the dentin. Therefore, since the only other protoplasmic source available is the process of the odontoblast, the function of conveying pain stimuli is ascribed to it.

Objection to Tomes' Theory—One of the main objections to Tomes' theory is the fact that it would be the only instance in which a cell of mesodermic origin formed the physiologic connection between nerve tissue and the outside. If this premise were adopted, a novel type of synapse would have to be involved for the passage of the impulse from the receptor, Tomes' fibril, to the nervous system in the pulp.

Conduction of Pressure Sensation—Some investigators claim to have seen nerve fibers running from the periodontal membrane into the dentin, whose function, however, is considered not that of conducting pain impulses. These fibers are concerned with pressure sensation. This conduction of stimuli to the periodontal membrane is due to the movement of the teeth. Therefore, in the innervation of the teeth, the consensus is that the nerves from the pulp, when their threshold is reached, conduct only impulses of pain, whereas the periodontal membrane carries impulses of tooth localization and those concerned with protection of the tooth against undue strain.

Discussion

A few competent histologists maintain that the presence of nerve fibers in the dentinal tubules has been clearly observed, but the overwhelming majority disagree sharply with this viewpoint. Many take exception to the presence of nerve fibers and state that these are von Korff's fibers, which enter the dentin.

In the absence of specific and all-conclusive stains for nerve fibers, it is difficult to confirm either theory.

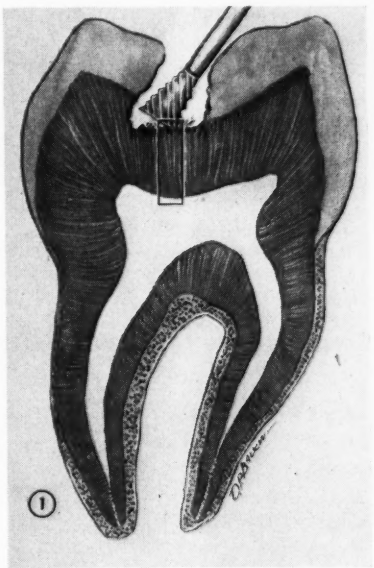
Tracing the delicate terminal nerve distribution in the root portion of the pulp involves great technical difficulties. Photomicrographic studies for this purpose resulted in misleading interpretation.

Methods for Treatment of Hypersensitive Dentin

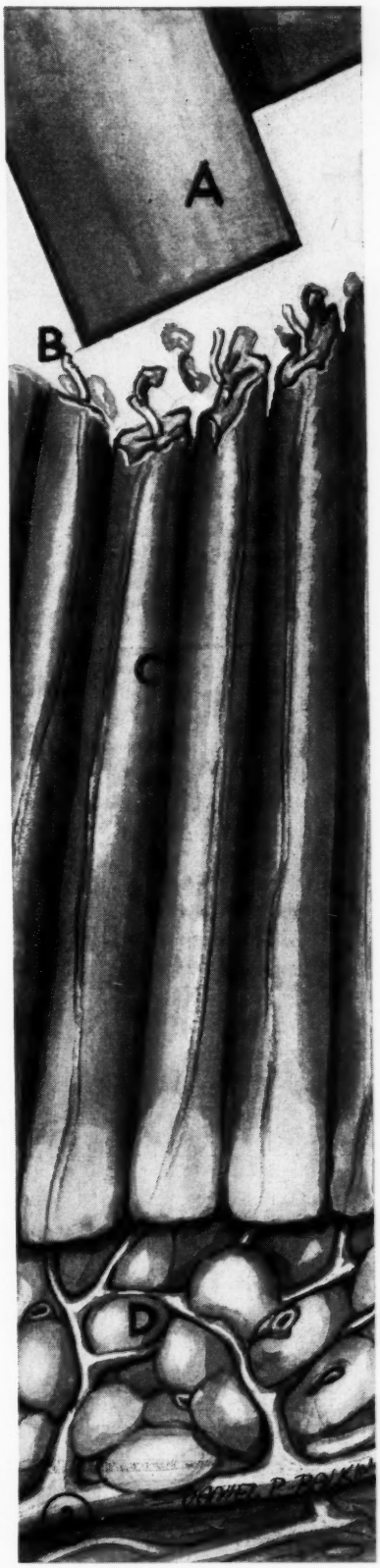
Many methods which have been used to desensitize sensitive dentin are still in current use. Some of them are founded on theories; others are based on empirical experience. Most investigators agree that there are several prerequisites for remedies for successful treatment for the alleviation of the pain of sensitive and hypersensitive dentin. According to Prinz,[40] these requirements are the following:

1. The remedy must not injure the organic constituents of the tooth and its surrounding tissues.

2. The remedy must not harm the pulp.



1. ***Cross section of a tooth showing bur rotating in the center. The rectangular area under the bur is shown enlarged in Figure 2.***



2. ***Blade of the bur (A) shown as it traumatizes the dentinal or Tomes' fibril (B) that is carried in the dentinal tubule (C) from the odontoblastic cells (D).***

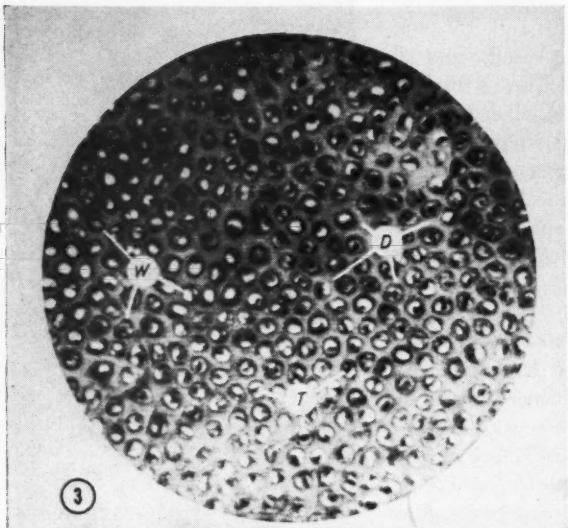


PLATE 22

DENTINAL TUBULES AND TOMES' FIBRES

Decalcified section of dentine cut at right angles to the direction of the tubules. Magnification × 710.

W—Wall of tubules. *T*—Tomes' fibres seen as black dots in the centre of the tubules. The space between the fibril and the wall of the tubule is occupied by tissue fluid. *D*—Dentine matrix.

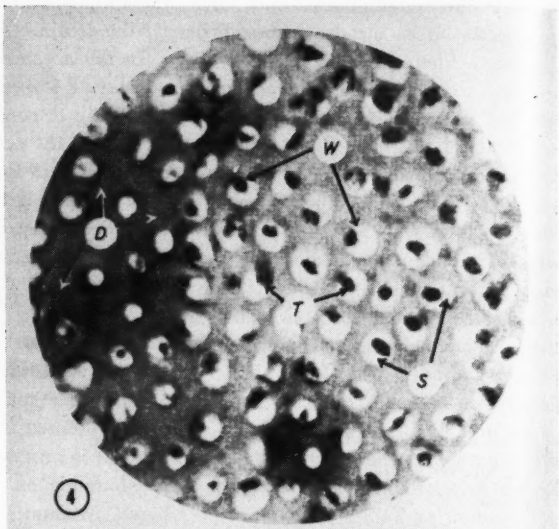


PLATE 23

Higher magnification of Dentinal Tubules and Tomes' Fibres × 4335.

D—Dentine matrix. *W*—Wall of tubule. *T*—Tomes' fibre. *S*—Space occupied by tissue fluid.

3. Its administration must be neither too painful nor too complicated.

4. It must not cause permanent discoloration of the tooth.

5. It should have quick and prolonged action.

6. It must be conveniently applicable to all classes of cavities regardless of their location.

Practical Aids—1. The use of psychology will serve to divert the patient's attention. Performing the least painful task first may have a beneficial psychologic effect on the patient.

2. It is necessary to maintain a dry field.

3. It is important to use sharp instruments, including sharp burs, and to manipulate them carefully and wisely.

4. The chief sources of pain in the use of burs are the heat, produced by friction, and the error of using sustained pressure.

5. Instruments in the order of their decreasing pain-producing potentialities are listed by Bodecker,[2,5,54] as burs, excavators, stones, and chisels. Jeserich,[2,54] who experimented with a thermocouple for testing heat production with instrumentation, confirmed this information.

6. Carpenter[54] also showed that heat could be controlled by an air-cooled handpiece. By this device com-

3, 4, and 5. ***From "Atlas of Dental Histology," by Manley and Brain. (Blackwell Scientific Publications, Oxford, England, 1947.)***

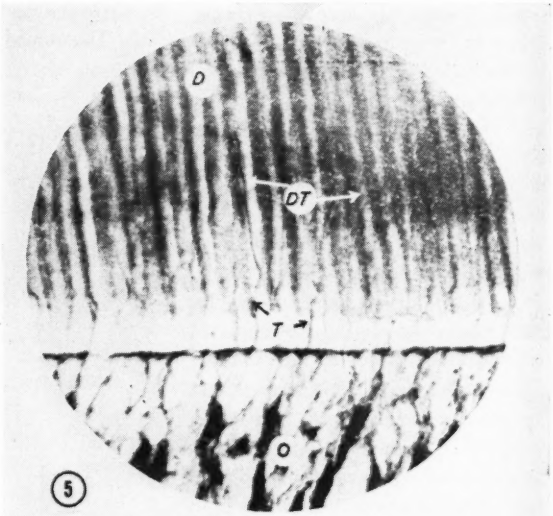


PLATE 29

DENTINAL TUBULES AND TOMES' FIBRES

Longitudinal decalcified section. Stained with Masson's Ponceau 2R-Light Green method.

Magnification × 660.

T—Tomes' fibres, processes of the odontoblast cells of the pulp, entering the dentinal tubules (*DT*). *O*—Odontoblasts. *D*—Dentine.

pressed air is directed upon the bur.

Relief of Hypertension in Dentinal Tubules—Since the primary pathologic cause of hypertensitive dentin is believed to be hypertension of the contents of the dentinal tubules, it is necessary to eliminate the moisture from the tubules, thereby relieving the hypertension and interfering with the ability of the dentinal fibrils to transmit impulses.

Electric Current: The electric current cataphoresis[7,31] has been used as a physical agent to desensitize dentin.

Cocaine Unreliable: A concentrated solution of cocaine on a pellet of cotton was applied to the sensitive cavity and carried by electromotive force along the dentinal tubules and into the pulp via the Tomes' fibers. The anesthetization of the pulp usually lasted at least an hour. This method, however, proved to be unsatisfactory because it was slow, frequently failed, and tended to produce complications of the pulp.

Nature and Use of Caustic Substances—Probably the commonest and most generally accepted agents utilized by the average dentist are caustics. Caustics or escharotics are substances which destroy vital and necrotic tissue through their chemical or physicochemical action. Caustics are irritants, which, if used in a higher concentration or for any length of time, have a deleterious effect on the pulp. Caustics act in different ways: (1) They dissolve proteins. Examples of caustics which exhibit this feature are certain salts, such as potassium and sodium carbonate. (2) Other caustics precipitate proteins, e.g., silver nitrate. (3) Caustics oxidize or reduce. (4) The final property of caustics is their action in extracting water from the cells. Concentrated mineral acids and alkalies all possess this ability. Silver salts act superficially and slowly. By combining with the chlorine present in the albumin, and in the presence of light, a jet-black discoloration of the dentin is produced by this agent.

Use of Zinc Chloride—Zinc chloride is one of the oldest remedies for hypersensitive dentin. Its action is due to its affinity for water and its coagulating action on albumin. Since zinc chloride is extremely irritating, it should not be used in deep cavities. Its danger lies in the liberation of hydrochloric acid. This effect has been modified by use in a solution of one part chloroform and four parts alcohol.

Phenol—The use of phenol in a pure state is common. Since liquified phenol does not penetrate deeply into the tooth structure, it may be applied safely to cavities irrespective of their depth. When applied to a dehydrated cavity combined with the warm air blast, it promptly produces a marked superficial numbing effect; however, this effect is brief, and the procedure is tedious. Robinson's[2,38,54,56] remedy, a solution of phenol crystals and potassium hydroxide, equal parts, with a few drops of glycerin, sufficient to make a paste, is well known in dental practice. It acts as a caustic and dehydrating agent. It is hygroscopic. Phenol has also been used in combination with several other chemicals with varying degrees of success.

Not Self-limiting Agents—Many investigators at various times have recommended protoplasmic poisons for the purpose of desensitizing dentin. In many instances these drugs are erroneously referred to as caustics. They are not self-limiting in their action. Arsenic trioxide is the principal substance of this group.

Arsenic—At one time arsenic was lauded as a desensitizer. Arsenic however, when applied in even minute quantities, will usually destroy the pulp, as its action cannot be controlled.

Formaldehyde—The method of choice of many operators has been formaldehyde, because of esthetic reasons for anterior teeth, due to its not being a staining agent. Formaldehyde is contraindicated in deep cavities as most writers concede that it will injure and often kill the pulp.

Paraform—Orban[38] has demonstrated successful results with a temporary restoration containing two and one-half per cent of paraform. Unaccountably, the paraform given off appeared not to kill the pulp but to stimulate it to deposit secondary dentin.

Combination Devitalizing — Buckley's[2,22,39,40,56] desensitization paste, consisting of 35 per cent dry formaldehyde (triozymethylene) combined with vaseline and other minor ingredients was an extremely dangerous drug as a desensitizer because it would injure, and in most instances, destroy the pulp. Prinz persistently disapproved of the paste. Experiments conducted at the University of Pennsylvania proved it to be a devitalizer.

Basic Theory in Hartman's Formula—Hartman's[2,14,38,42,43,54,56] formula is by weight: thymol one and one-fourth parts, ethyl alcohol one part, sulphuric ether two parts. According to McGehee[31] Hartman based his claims for the action of this compound on the following theories which have been both disputed and upheld:

1. The dentin must contain lipoids which play an important part in the transmission of sensation in and through the dentin.

2. Ether and chloroform are both lipoid solvents and therefore will dissolve these lipoids when brought in contact with dentin containing them.

3. Thymol is soluble in lipoids and will be dissolved in the lipoids of the dentin when applied to them.

4. The application of these agents, prepared in a properly balanced solution, would produce a reversible action; namely, the ether and chloroform would dissolve the lipoids, and the thymol would become dissolved in them.

5. Dissolution of the lipoids concerned in the transmission of sensation would occur and also an analgesic effect in the area of application through action of the thymol. Operators have met with considerable disappointment concerning the anesthetic action of this formula.

Additional Means of Desensitizing Teeth

Many local anodynes such as eugenol and menthol mixed with camphor, thymol and phenol, which superseded the use of cresote, have been sealed into sensitive cavities for twenty-four hours to mitigate pain before and during the removal of caries.

Pressure—Anesthesia by means of pressure has been in use for many years. The principle underlying this practice has been to force the anesthetic agent, which has mainly been cocaine or procaine hydrochloride.

Infiltration—By far the most common means of obtaining anesthesia is by infiltration. Procaine, monocaine, novol, zylocaine, and many others are used as anesthetic agents.

General Anesthesia—Nitrous oxide and oxygen have been in wide use for cavity preparation. In this procedure, the patient maintains consciousness.

Premedication not Favored—The use of drugs prior to dental procedures is not recommended. There is constant danger that the patient will be unable to leave the office immediately after the operation. Since drugs are habit forming, the patient may become addicted, especially when repeated office visits are necessary.

Successful Use of Sodium Fluoride—Hoyt and Bibby,[17] Lukomsky,[27] Volker,[53,54] and many others have conducted extensive experiments with fluorine to desensitize hypersensitive dentin. When it became evident that the results of the desensitization treatment with 33 per cent sodium fluoride paste were so satisfactory that patients were praising the results and even requesting such treatment, the method of treatment was standardized. The effects of treatment with sodium fluoride have been found to vary with the individual and in many cases last for many months. The authors, however, warn that sodium fluoride is a toxic drug, which must be used with caution. It is composed of 33⅓ per cent sodium fluoride, 33⅓ per cent kaolin (white clay), and 33⅓ per cent glycerine made into a paste.

Gottlieb's Solution—Gottlieb[13] introduced a chemical method for desensitizing the dentin by the administration of septechem, which is a silver nitrate preparation combined with indigosol. Its primary aim lies in the field of caries prophylaxis.

Application of Cold—There are various ways of applying cold to the teeth to prevent the pain of cavity preparation.

Snow: In the middle of the 16th century Thomas Bartolinus used snow to reduce the sensation of pain.

Apparatus to Lower Temperature: Fabret of Nice, France, introduced the gazotherm,[38] an apparatus by means of which he was able to lower the temperature of a tooth so gradually and evenly from about—37° Centigrade (—34.6° Fahrenheit) to about —5° Centigrade (23.0° Fahrenheit) that cavity excavation could be accomplished painlessly. Oxygen was conveyed to a mixing chamber where it was cooled by carbon dioxide. The temperature was controlled by a rheostat. There was no damage to the pulp unless the tooth was cooled more than five minutes. The apparatus was too complicated for general use.

Volatile Liquids: The spray of ethyl chloride, ether, and sulphuric ether with chloroform are volatile liquids, which cause a reduction of temperature by rapid evaporation and, consequently, pain by their application. According to Prinz[39,40] liquid nitrous oxide, liquid carbon dioxide, and liquid air, all of which have boiling points far below zero, are recommended for such purposes. Prolonged freezing causes sudden shock to the pulp and produces later degeneration and death.

Use of Chilled Bur: Thomas demonstrated that pain could be reduced by chilling the bur. The results of Thomas' study showed that in 33 (76.8 per cent) of the 43 teeth treated, the chilled bur reduced or eliminated pain in the dentin.

The WaRoPa Method—Theoretic Principles

Since 1922 Walter Roos of Basel, Switzerland has performed many experiments to anesthetize the dentin with a refrigerated bur. He constructed a practical handpiece. Steady progress in improving it has been made during the years.

First Handpieces and Contra-Angles Designed—In 1939 Roos designed the first handpieces and contra-angles of high precision engineering, which operated successfully. However, World War II delayed the possibility of producing instruments of proper size and weight for the required WaRoPa technique. Continued improvements of the WaRoPa Apparatus have overcome its former cumbersome size.

Intense Chilling of Bur—The fact that pain can be eliminated or at least greatly reduced during cavity preparation by intense chilling of the bur introduces a new theory. It presents an entirely new concept regarding the conflicting arguments of both theories for explaining the transmission of pain in the dentin.

Theory Widely Accepted—According to Roos[43] the nerves of the pulp should be last in line of importance for consideration as conductors of pain in the dentin. The leading principle which has been disregarded is the Tomes' fibers with their odontoblasts. These Tomes' fibers are protoplasmic processes of the odontoblasts. The latter are large elongated cells of the pulp adjacent to the dentin and closely arranged on the wall of the pulp chamber within the plexus of Raschkow. The odontoblasts are nourished by the blood vessels and innervated by the nerve fibers of the pulp. The odontoblastic cells provide for the nutrition and the metabolic changes of the dentin, while each cell sends its slender protoplasmic process (Tomes' fiber) into the corresponding dentinal tubule. These delicate wavy canals branch outwardly from the pulp cavity, penetrating all parts of the dentin and anastomose with each other. They are interrupted as they continue through the spaces between the pulp and the dentin, known as the interglobular spaces, which contain the organic matrix of the dentin.

Minute Fiber Continues as Tomes' Fiber—Microscopic observation discloses that through the interglobular spaces, each dentinal tubule is seen to contain a minute fiber from each odontoblastic cell. This delicate fiber continues as a Tomes' fiber within the sheath of Neumann, extending up to the amelodentinal junction.

Protoplasmic Fluid Within Prolongation—The fact, influencing Roos to consider the odontoblast and the Tomes' fiber a unit, infers that the

odontoblast-Tomes' fiber is a cell with a slender prolongation of the odontoblast within the same cell membrane, which contains the protoplasmic fluid.

Pressure Exercised by Bur—Since the protoplasmic fluid of the odontoblast-Tomes' unit is incompressible, the revolving bur in cavity preparation exercises pressure and suction on the contents of the dentinal tubules. The nerves in the dentin are then subjected to mechanical strain and irritation.

Protoplasm Withdrawn by Bur—As the soft protoplasm of the Tomes' fiber tries to escape pressure, exercised by the rotating bur, it is forced into the dentinal tubule and against the opposite side of its wall. When the tubule is cut through completely, the bur instantly withdraws the protoplasm, which is then teased and smeared over the severed hard margin of the dentinal tubule.

Pain Sensation Produced—These pressure and suction effects exerted on the Tomes' fibers result in vibrations and movement of the protoplasmic fluid. This movement is transmitted to the odontoblasts, which in turn stimulate the sensory nerve endings in the dental pulp within the plexus of Raschkow. This produces sensation of pain.

Comment

Theoretically it is reasonable to believe that a method capable of preventing the movement in the odontoblast-Tomes' unit will abolish or at least diminish dental pain during cavity preparation. However, it should not harm the pulp.

With the WaRoPa Method the movement of the protoplasm can be prevented by congealing it through the safe medium of cooling, obtained by highly compressed carbon dioxide (CO_2). The technique requires definite precision instruments to achieve anesthesia of the dentin.

(End of first installment)

18 *Asylum Street.*

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A Portable Cephalometer for General Dentistry

(*Continued from page* 445)

2. A perpendicular line is erected to the top of the anterior nasal spine. This perpendicular line divides the line representing face height into two parts, N-ANS, which represents nasal height, and ANS-Gn, which represents dental height.

3. The percentage contribution of nasal height is computed by dividing the nasal height by the total face height. The procedure described is that recommended for the determination of the rest position.

4. It is understood that the patient must be told to relax and shown how he can do so by swallowing several times to permit the mandible to come to a rest and not with the teeth in occlusion (Figs. 9A and 9B).

Conclusion

A description of a portable cephalometer is presented. The advantages of the apparatus are cited. Cost is no longer a deterring factor; the accuracy of the office-built device is as reliable as those which cost $250-$600 besides eliminating the additional adjuncts necessary which often significantly outweigh the original cost of the head positioner.

1777 *Ocean Parkway.*

Intraoral ROENTGENOLOGY

DONALD W. McCORMACK, B.S., D.D.S., Sierra Madre, California

DIGEST

In this article, which continues the discussion of one previously published,[1] a simpler method of holding the film throughout the mouth with bite-blocks is illustrated in technique charts. Photographs showing the use of the extension localizer are presented. The relative position of the x-ray unit, operative unit, and dental chair is illustrated and discussed.

Purpose of Technique

The purpose of longer focal film distance (F.F.D.) technique is to obtain roentgenographic images of the teeth and supporting structures with greater anatomic accuracy. During the last decade many dentists, dental study groups, and dental colleges have accepted the fundamental principles upon which longer distance techniques are based and are experimenting in methods of supplying these principles in a practical manner.

New Methods Employed—Most operators are changing from the short, eight-inch distance and must therefore learn how to control the placement of the x-ray unit at longer distances, and how to keep the film from bending and from touching the teeth. It is futile to increase the distance if the films are bent and held against the teeth with the patient's fingers as the resulting distortions are scarcely lessened.

Experience in Longer Distance—Following the original investigations of Franklin McCormack, the author began using a 36-inch distance twenty-five years ago with patients lying on a table or sitting in a chair. Films backed with stiff metals to prevent bending and various types of film holders to maintain the film in proper position in the mouth were used.

Device for Simplification—The film positions shown in the technique charts are the results of extensive practical experience. The extension localizer, the anatomic landmarks, and the bite-blocks are more recent developments to simplify the procedure of the chair technique.

Optimum Distance—At the present time, with the equipment and films on the market, a distance of approximately 20 inches seems to be optimum.

Technique

The following factors are involved in a successful technique:

1. The two bite-blocks illustrated in the technique charts are used in conjunction with two flat metal plates that slip into the slots of the blocks along with the film. One flat metal plate is for horizontal and the other for vertical or narrow film placement.

2. In the anterior regions the film can be folded lengthwise to make it narrow, using the narrow metal backing.

3. Eastman DF-55 narrow film can be used without the metal backing. These latter films are especially adaptable for children's mouths.

4. Rinn film mount, EZ-24A, accommodates all of the films shown on the technique charts. With the bite-blocks it is not necessary for the patient or operator to hold any of the films with the hand or fingers.

5. A minimum of 20 films, 16 apical, and 4 bitewings, are taken for a complete case.

Changes in Angulation

The increase in the vertical angles, both positive and negative, of several regions, since the last publication makes it easier for the student to arrive at the desired angle with less movement of the patient's head because of the following factors:

1. In placing maxillary films, the patient tends to raise the head, thus *decreasing the positive* vertical angle.

2. In placing the mandibular films the patient tends to lower his head, thus *decreasing the negative* vertical angles.

3. The numerical horizontal angles have been eliminated because there is no corresponding angle indicator on most x-ray machines.

4. It should be emphasized that the suggested vertical angles are only guides for placing the x-ray unit in approximately the correct position *before* placing the film in the mouth. The final vertical and horizontal angles must be obtained by means of the Angulation Landmarks.

[1]McCormack, Donald W.: The Right Angle Principle in Roentgenology, DENTAL DIGEST **57**:106-114 (March) 1951.

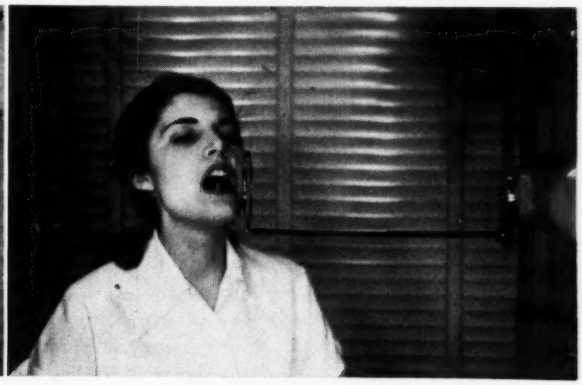
Maxillary Region I

Mandibular Region I

Maxillary Region II

Mandibular Region II

Maxillary Region III



Mandibular Region III

Maxillary Region IV

Mandibular Region IV

1

Extension Localizer

Figure 1 is a series of photographs of a patient seated in a dental chair. The relationship of the x-ray unit and extension localizer to the patient's face, in Maxillary and Mandibular Regions 1, 11, 111, and IV is shown.

Method—1. The extension localizer is necessary if the Angulation Landmarks on the technique charts are to be followed. With the patient's head in the proper position (the same as in other techniques) the x-ray unit with the extension localizer is set according to the Angulation Landmarks as shown in the chart.

2. The film is then placed in the mouth.

3. The operator must sight along the line of the central x-ray beam, through the localizing ring, to visualize again the landmarks and make the necessary corrections in the patient's head position.

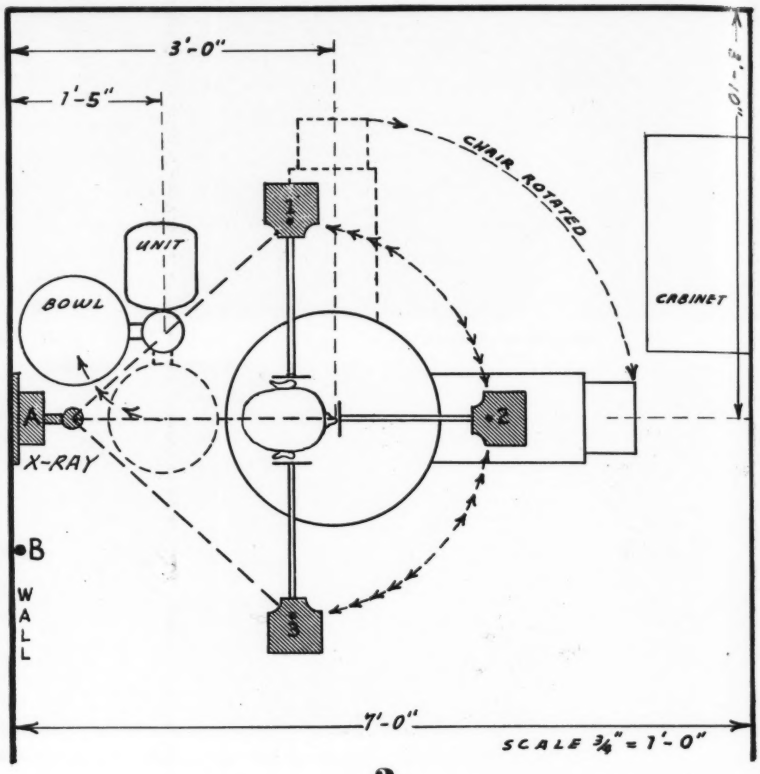
4. In several regions, the film is actually placed through the localizing ring when placing it in the mouth. This sequence helps to expedite the procedure and the film is retained in the mouth a minimum length of time.

Handicaps with Use of Long Cylinder—In any technique using a long cylinder (long cone) it is usually necessary to place the film in the mouth first and then place the x-ray unit in position. This means that the film is in the mouth for a longer time, and it is also impossible for the operator to visualize the image that is to be obtained on the film as the long cylinder on the x-ray unit is in the way.

Limitation of Radiation Field—The field of radiation is confined by the adaptor at the x-ray aperture, and coincides with the ring of the extension localizer at an 18-inch distance. A film held outside of the ring is not exposed which means less radiation to the patient and operator.

Toleration Increased — By using fast films (Eastman Ultra-Speed or Rinn Extra-Fast), the exposure times at 20 inches are comparable to those used at 8 inches with radiatized film. A patient can safely tolerate four times as many exposures with the fast films as compared with the radiatized films, another safety factor.

OPERATORY



2

Variations in Exposure—It is necessary to vary the exposure factors (milliamperage, kilovoltage, and exposure time) either singly or in combinations, between large and small patients and between men and women. The extension localizer provides an additional factor that can be varied to meet the case. The distance can be shortened to 16 inches for a large or dense jaw or for men, and be extended to 22 inches for a small person or woman. With this simple change made before starting on the case, all other factors remain unchanged. The same series of exposure times throughout the mouth can then be used for almost all patients.

Position of Apparatus

The relative positions of the x-ray unit, operative unit, and dental chair in most offices are such that it is seldom possible to use a 20-inch distance for all areas of the mouth, even if the chair is rotated or reclined into several positions. This is the greatest drawback to accepting increased target distance techniques in practice.

Approved Position for Unit—As a 20-inch distance cannot be achieved without some change in chair position, the most practical place for the x-ray unit would be where it would require only *one* change in chair position.

Chair Rotated into Position—Figure 2 shows the dental chair rotated clockwise from its customary position until it is 90 degrees to the wall. The stops must be changed in some chairs to allow this rotation. The cuspidor bowl must swing toward the wall out of the way of the controls on the back of the chair (controls and headrest are not shown in drawing). If the bowl does not swing, the chair must be pulled backward until it can be rotated. The x-ray unit is then placed directly back of the center of the chair, in position A, against the wall.

Adjustments in Position of Chair—The pedestal type x-ray unit may interfere with the swinging of the bowl and have to be placed off center from the chair toward position B, on the

MAXILLARY TECHNIC CHART

AVERAGE VERTICAL ANGLE AND FILM PLACEMENT

Final angle to be determined by the amount of film showing below the teeth in Regions I, II and III.

AVERAGE HORIZONTAL ANGLE AND FILM PLACEMENT

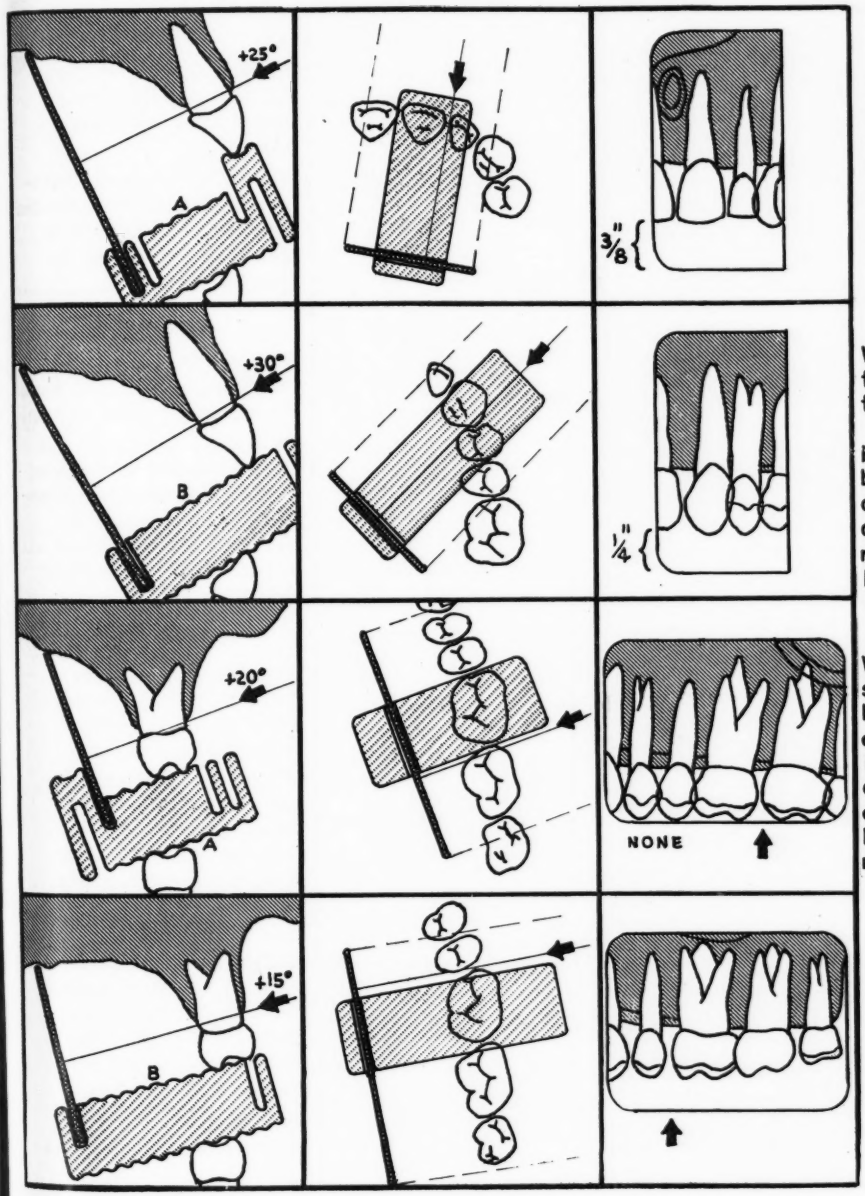
Final angle to be determined by teeth to be centered on film or by the interproximal contact desired.

IMAGE ON FILM

Try to visualize this picture on the film when making film placement and angulation estimates.

ANGULATION LANDMARKS

Landmarks are obtained when sighting along the central ray thru localizing ring. Raise or lower the head to get final vertical angle. Rotate the head to get final horizontal angle.



REGION I

VERTICAL - No less than 3/8 inch of film should extend below the incisal edges.

HORIZONTAL - Film should include 1/2 of adjacent central.

REGION II

VERTICAL - Only 1/4 inch of the film should extend below the tip of the cuspid crown.

HORIZONTAL - Cuspid and 1st bicuspid should be centered on the film, altho usually overlapped. This view separates the two roots of the 1st bicuspid.

REGION III

VERTICAL - Very little film should be allowed to extend below the tips of the cusps of the bicuspids. This film is not parallel to any tooth, distorting the crowns but obtaining the apices.

HORIZONTAL - 1st and 2nd molar interproximal space.

REGION IV

VERTICAL - Central ray parallel to the occlusal plane of the 2nd molar.

HORIZONTAL - 2nd bicuspid and 1st molar interproximal space. Film should include the tuberosity.

MANDIBULAR TECHNIC CHART

AVERAGE VERTICAL ANGLE AND FILM PLACEMENT

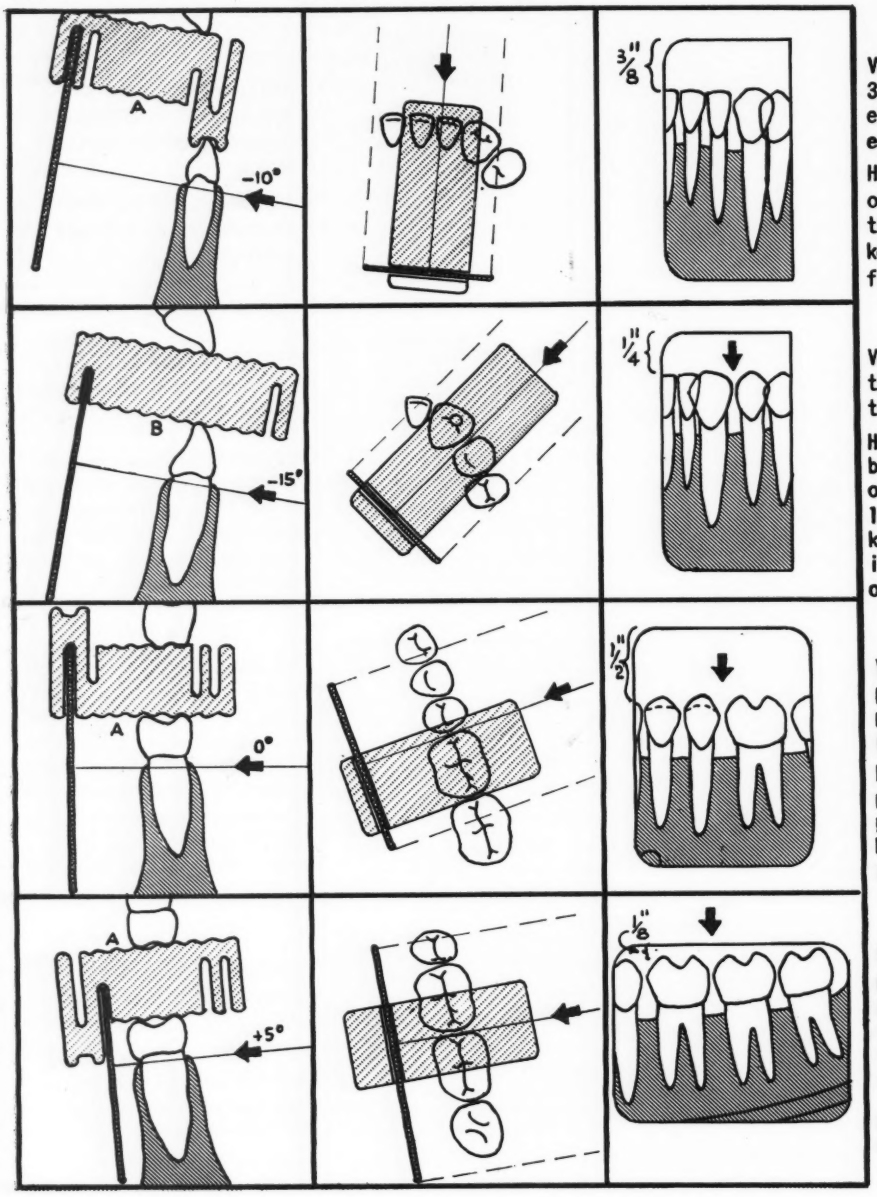
Final angle to be determined by the amount of film shown above the teeth in Regions I and II.

AVERAGE HORIZONTAL ANGLE AND FILM PLACEMENT

Final angle to be determined by teeth to be centered on film or by the interproximal contact desired.

IMAGE ON FILM

Try to visualize this picture on the film when making film placement and angulation estimates.



ANGULATION LANDMARKS
Landmarks are obtained when sighting along the central ray thru the localizing ring. Raise or lower the head to get final vertical angle. Rotate the head to get final horizontal angle.

REGION I

VERTICAL - Not less than 3/8 inch of film should extend above the incisal edges.

HORIZONTAL - Lateral incisor should be centered on the the film. Film should be kept in the center of the floor of the mouth,

REGION II

VERTICAL- Only 1/4 inch of the film should extend above the tip of the cuspid crown.

HORIZONTAL- Cuspid and 1st bicuspid should be centered on the film, sometimes overlapped. Film should be kept back from teeth and in the center of the floor of the mouth.

REGION III

VERTICAL - Central ray parallel to the occlusal plane of the 1st molar (not of bicuspids).

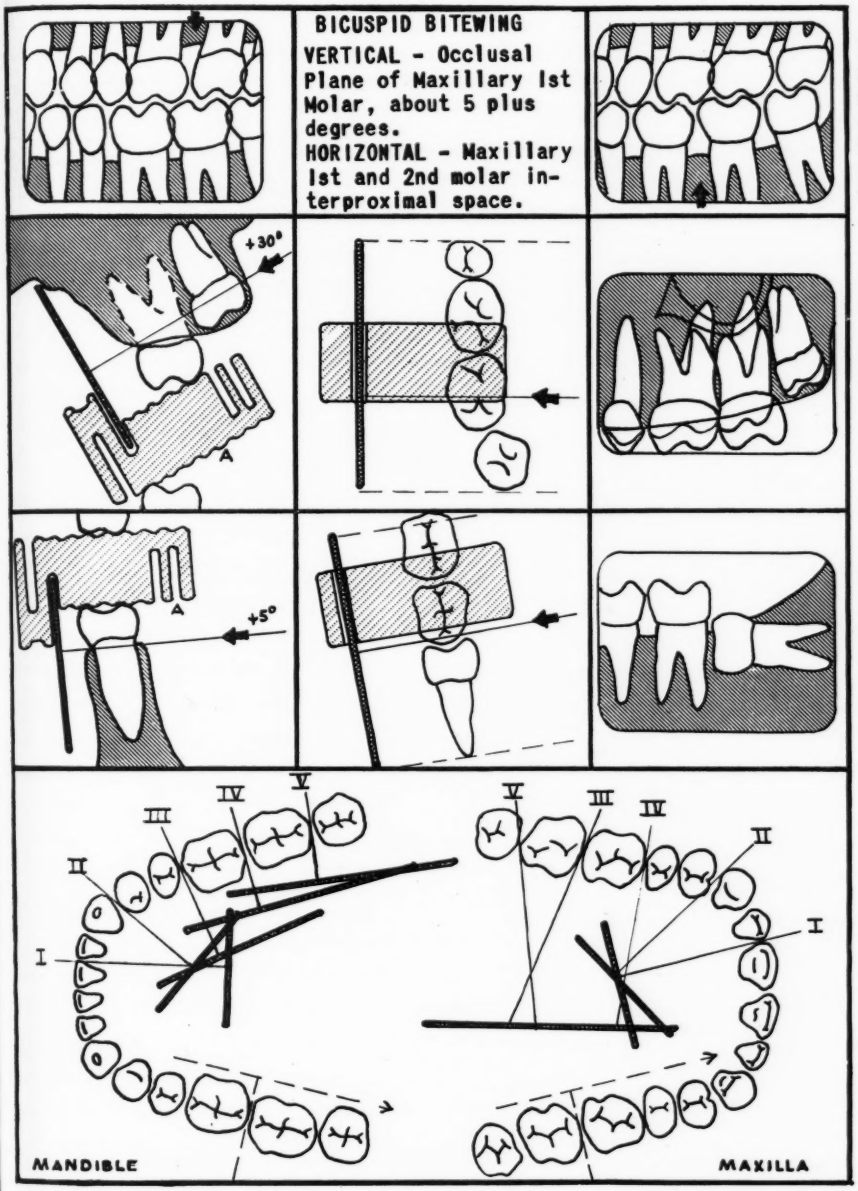
HORIZONTAL - 2nd bicuspid and 1st molar interproximal space. Try to keep the film forward to include the 1st bicuspid.

REGION IV

VERTICAL - Central ray parallel to the occlusal plane of the 2nd molar. About 1/8 inch of film should extend above the crowns of the molars.

HORIZONTAL - 1st and 2nd molar interproximal space.

SUPPLEMENTARY TECHNIC CHART



BICUSPID BITEWING
VERTICAL - Occlusal Plane of Maxillary 1st Molar, about 5 plus degrees.
HORIZONTAL - Maxillary 1st and 2nd molar interproximal space.

MOLAR BITEWING
VERTICAL - Occlusal plane of maxillary 2nd molar, about plus 10 degrees.
HORIZONTAL - Mandibular 1st and 2nd molar interproximal.

MAXILLARY REGION V
This view is for impacted 3rd molars.
VERTICAL angle up to 30 degrees.
HORIZONTAL angle at least 90 degrees.

MANDIBULAR REGION V
This view for impacted 3rd molars.
VERTICAL angle same as Mand IV.
HORIZONTAL angle slightly distal to 1st and 2nd molar interproximal space.

COMPOSITE OF HORIZONTAL ANGULATIONS

In the maxilla the films for regions III, IV and V are in about the same place, so they are shown as one film. Bitewing film placement is indicated by dotted lines.

The experienced technician will readily understand that no single method will be completely satisfactory in all mouths. These charts show the most common usage of the two bite blocks and are intended to be illustrative rather than detailed.

There is enough flexibility of film depth (slots from 1/4" to 1/2" deep and film used either horizontally or vertically) and enough possible variation of film distance from the teeth (1/8" to 1-1/4") to make this method of positioning films adaptable to any mouth.

wall. A wall mounted x-ray unit does not interfere with the swinging of the bowl as the unit is above it. When the x-ray unit is directly behind the chair, the latter can be placed from 36 to 40 inches away from the wall. The chair must be moved closer to the wall if the x-ray unit is moved from position A toward position B. The limitation of these changes is governed (1) by the length of the arm of the x-ray unit, and (2) by the amount of space needed between the chair and the wall and the width of the room being used.

No Interference with Arm of X-ray Unit—Points 1, 2, and 3 in Figure 2 represent the focal spot of the x-ray unit and should be 18 inches from the localizing ring. The latter is usually about 2 inches from the film in the mouth, thus making a 20-inch focal film distance. The head of the x-ray unit must be able to extend from the left side of the patient's head (1) around to the front (2) and then to the right side of the patient's head (3). This drawing shows the tip of the nose of patient at the center of the chair. Located as illustrated, the arm of the x-ray unit is above the dental unit and the patient's head and, therefore, has nothing to interfere with its movement.

Height of Chair and X-ray Unit

The head of the x-ray unit cannot travel up and down enough to obtain the extreme positive and negative vertical angles. The chair must compensate by being raised or lowered.

Maximum Changes in Position of Chair—The x-ray unit is most efficient if mounted so that the center of rotation of the tube is about 62 inches above floor level. Even so the chair may have to be raised and lowered as much as 10 inches. To facilitate taking the most exposures with the least amount of changing of the x-ray unit and chair, the following sequence is charted. These are about the maximum changes that would have to be made with the average equipment in use.

Changes in Position of Chair with Average Equipment

SIDE	REGION	POSITION OF CHAIR	REMARKS
Left	Maxillary I	Lowest	Patient usually enters chair in this position.
"	Maxillary II	Same	
"	Maxillary III	Raise	About 5 inches for next 6 regions.
"	Maxillary IV	Same	
"	Molar BW	"	
"	Mandibular IV	"	
"	Bicuspid BW	"	
"	Mandibular III	"	
"	Mandibular II	Raise	About 5 inches more for 4 regions.
"	Mandibular I	Same	
Right	Mandibular I	"	
"	Mandibular II	"	
"	Mandibular III	Lower	About 5 inches for 6 regions.
"	Bicuspid BW	Same	
"	Mandibular IV	"	
"	Molar BW	"	
"	Maxillary IV	"	
"	Maxillary III	"	
"	Maxillary II	Lowest	Position from which patient is dismissed.
"	Maxillary I	Same	

Sierra Madre Medical Center.

Author's note: Equipment and supplies for the described technique are distributed by the Ideal X-Ray Supply Company, 382 East Walnut Street, Pasadena, California.

Low Blood Sugar

HYPOGLYCEMIA may, by producing an increase in cardiac work, indirectly determine or aggravate myocardial infarction, angina pectoris, and sometimes cardiac neurosis. A protein-rich diet is suggested for patients whose angina pectoris is more easily produced, or less quickly relieved by rest, at times of the day when the blood sugar level is likely to be low.

From Medical Literature Abstracts, *Journal of the American Medical Association* **155**:215 (*May* 8) 1954.

The EDITOR'S *Page*

A BOOK on physiology inscribed "This book is dedicated to the proposition that learning can be fun," represents, we hope, a commendable new trend in scientific writing. Most of the books on science are impersonal, standardized, and entirely lacking in literary style. Many of them are so deadly in their dullness that their contents are undisturbed by practical men. A book that remains on the library shelf and that has no impact on the lives of people cannot be considered a successful literary product despite the hours of scholarship and toil that went into the production.

Two members of the faculty of the University of Alabama Dental school dared be different and created a scientific book that has charm and should appeal to readers.[1] One of the authors, a former newspaper man, has injected into the field of scientific writing a briskness of expression that is well illustrated by this definition: "Physiology is the study of what makes us tick." This is more effective than the usual ponderous and involved definitions. In addition to the crisp writing the book is well illustrated with good drawings, many of them being of a cartoon character. The book is modern in attitude and modern in method of teaching.

Most of us who have been in clinical practice for any considerable time have occasional misgivings over our lack of knowledge in the basic biologic subjects and the new developments in these fields. There was a time in the life of dentists, when the State Board examinations were behind us, when we could forget the basic medical subjects and go on our serene clinical way. Those days are now gone for anyone who wishes to practice dentistry with proficiency and intelligence. The public expects us to be more than expert mechanics.

The physiology of digestion begins in the oral cavity. The physiology of the central and autonomic nervous systems is expressed in the pain mechanisms and reactions that are such a familiar part of the dental experience. The physiology of muscle and bone is of concern to the orthodontist, the prosthodontist, and the periodontist. The circulatory system and the phenomena of hematology are matters of practical interest to the oral surgeon. There is no aspect of dental practice that is not intimately related to some or to several aspects of fundamental physiology. The dentist who wants to learn more about these subjects can do no better than read the PHYSIOLOGY OF MAN by Langley and Cheraskin.

Present-day emphasis on the role of the autonomic-endocrine axis as related to health and disease is expressed by the authors:

"*The constancy of the internal environment* is by far the most important single concept in the entire field of physiology. Everyone who studies physiology must be impressed with the remarkable constancy of the internal environment. It has been seen how this concept applies in the case of temperature control. It will be learned that other constancies also exist. For example, the blood-sugar level is rapidly returned to within the normal range despite the fact that we eat four pieces of chocolate cake at one meal, then literally starve ourselves for the next day. Obviously, there must be highly sensitive and exquisitely integrated mechanisms charged with the responsibility of maintaining the constancy of the internal environment. Physiology is concerned with the study of these mechanisms—mechanisms which have been termed by the eminent American physiologist, Walter Cannon, *homeostatic mechanisms*. The constancy of the internal environment, Doctor Cannon labeled *homeostasis*. This word, homeostasis, is derived from the Greek *homoios*, meaning like or similar, and *stasis*, a standing still. In other words, there is a standing still, a constancy of the internal state of the human being. Clearly, the word is well chosen."

Although the physiology of man has been relatively constant for thousands of years, much of our understanding of his complex functions has come to us in the last few decades. There are still vast unexplored areas but every year more of these areas will be explored and mapped. Every day we are learning more about "what makes us tick." Langley and Cheraskin in their book have done their share to explain many of these facts of life to us.

[1] Langley, L. L., and Cheraskin, E.: The Physiology of Man, New York, McGraw-Hill, Inc., 1954. Price $5.50.

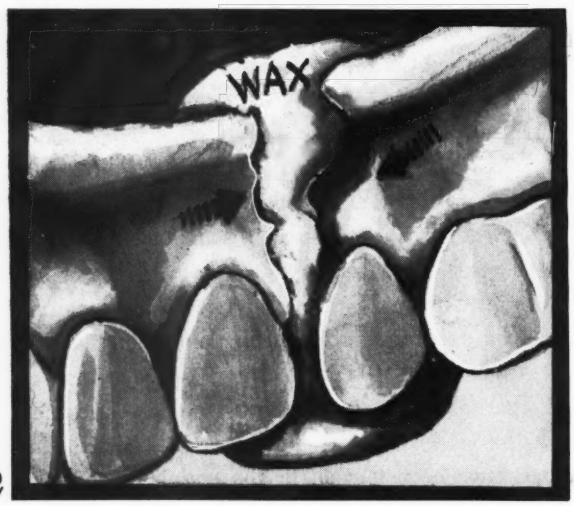
Clinical and Laborator

1

Plastic Envelope for Laboratory Materials

Ben E. Pleshette, D.D.S., New York

1. To one unit of water measure sufficient powder to make the proper consistency for plaster, stone, or alginate. Place the powders in plastic envelopes and seal. These can be stored and ready for immediate use when needed. This procedure saves time and assures uniform results.

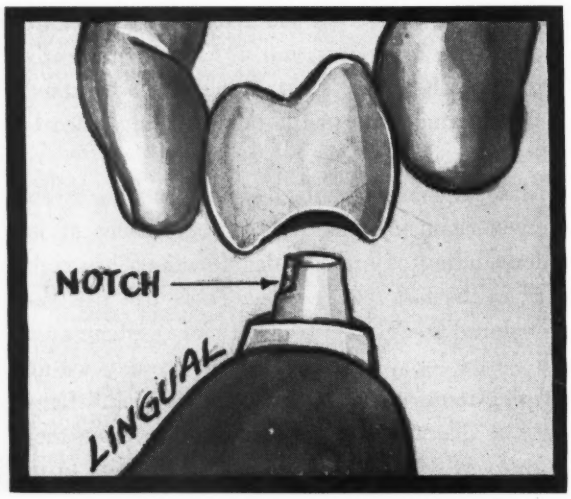


2

Bridge or Denture Repair

Harry Cherry, D.D.S., Brooklyn, New York

2. Press the broken pieces of the appliance into a piece of carding or utility wax. Aline and correlate the parts, then apply sticky wax to secure the parts in their correct positions.



3

To Prevent Rotating of a Crown on the Preparation

S. M. Dooreck, D.D.S., Brooklyn, New York

3. In the preparation for a jacket crown, cast crown, or veneer crown, place a notch on the lingual surface of the tooth. The finished crown will fit into this groove to prevent the crown from turning. The groove will also be an aid to proper cementation.

READERS *are Urged to Collect* $10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10.00 on publication.

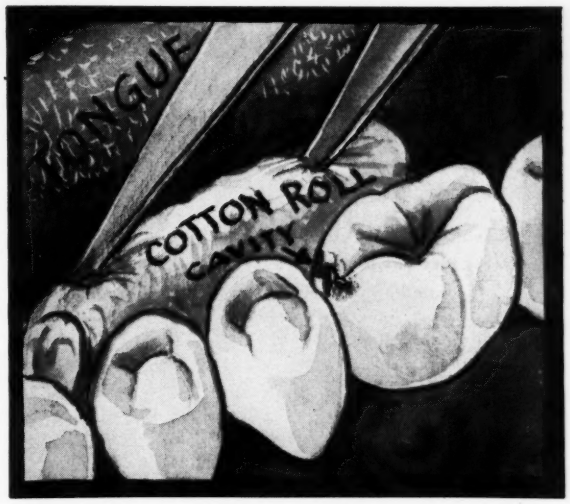
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Access in Cavity Preparation

James H. Greive, B.D.S., Syd. University, Warburton, Victoria, Australia

4. In order to obtain better access and clearer vision in the preparation of Class 5 cavities on the lingual surface of lower molars a pair of cotton pliers with beaks open is used to hold a cotton roll against the mucous membrane below the molar. This keeps the tongue and saliva out of the operating field.

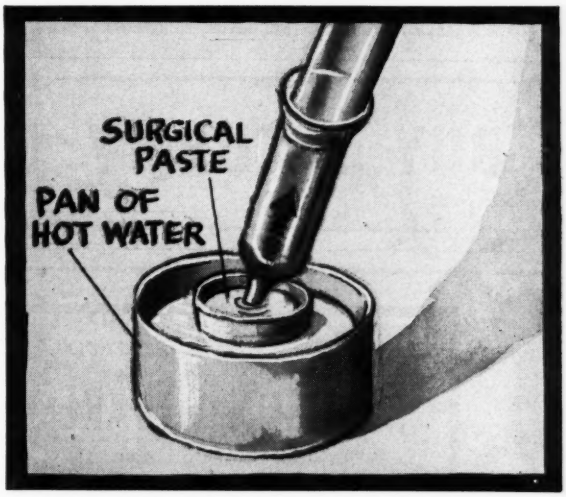


4

Filling Syringe with Surgical Ointment

Ben H. Haines, D.D.S., Las Cruces, New Mexico

5. Some dentists prefer to use a glass syringe to deposit surgical ointment into postextraction wounds. Instead of trying to pack the stiff ointment into the barrel of the syringe, warm the ointment in a water bath, then draw it into the syringe.

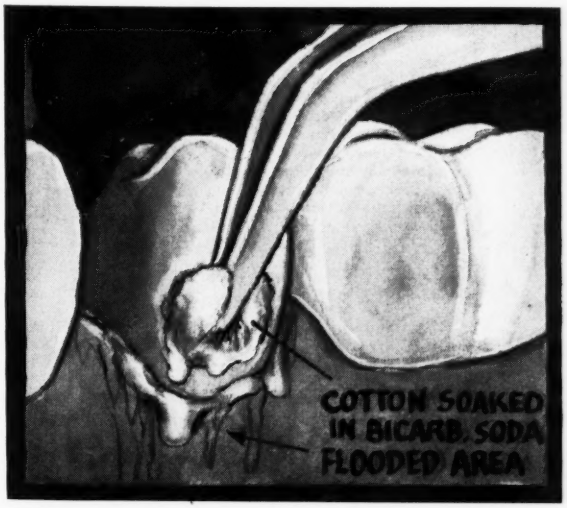


5

Precaution in Cementation

E. Bressman, D.D.S., Irvington, New New Jersey

6. Fill a dappen dish with a saturated solution of bicarbonate of soda. If for any reason an inlay or bridge does not go to position when it is cemented, flood the margins of the casting with the bicarbonate solution. This interferes with the setting of the cement and allows the casting to be removed for recementation.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 470 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

MEDICINE *and the Biologic Sciences*

Postcholecystectomy Syndrome

Nearly 25 per cent of all patients who have had gallbladder surgery experience a condition known as postcholecystectomy syndrome. This is an association of upper right quadrant pain, jaundice, fever, and postprandial dyspepsia after removal of the gallbladder.

The syndrome results from (1) diagnostic errors including improper surgical indications, (2) technical blunders, and (3) postoperative complications. The usual causes of postoperative syndrome are (1) common duct stones missed at operation or formed subsequently, (2) inadequate surgery that leaves cystic duct remnants or results in adhesions, or (3) liver disturbances.

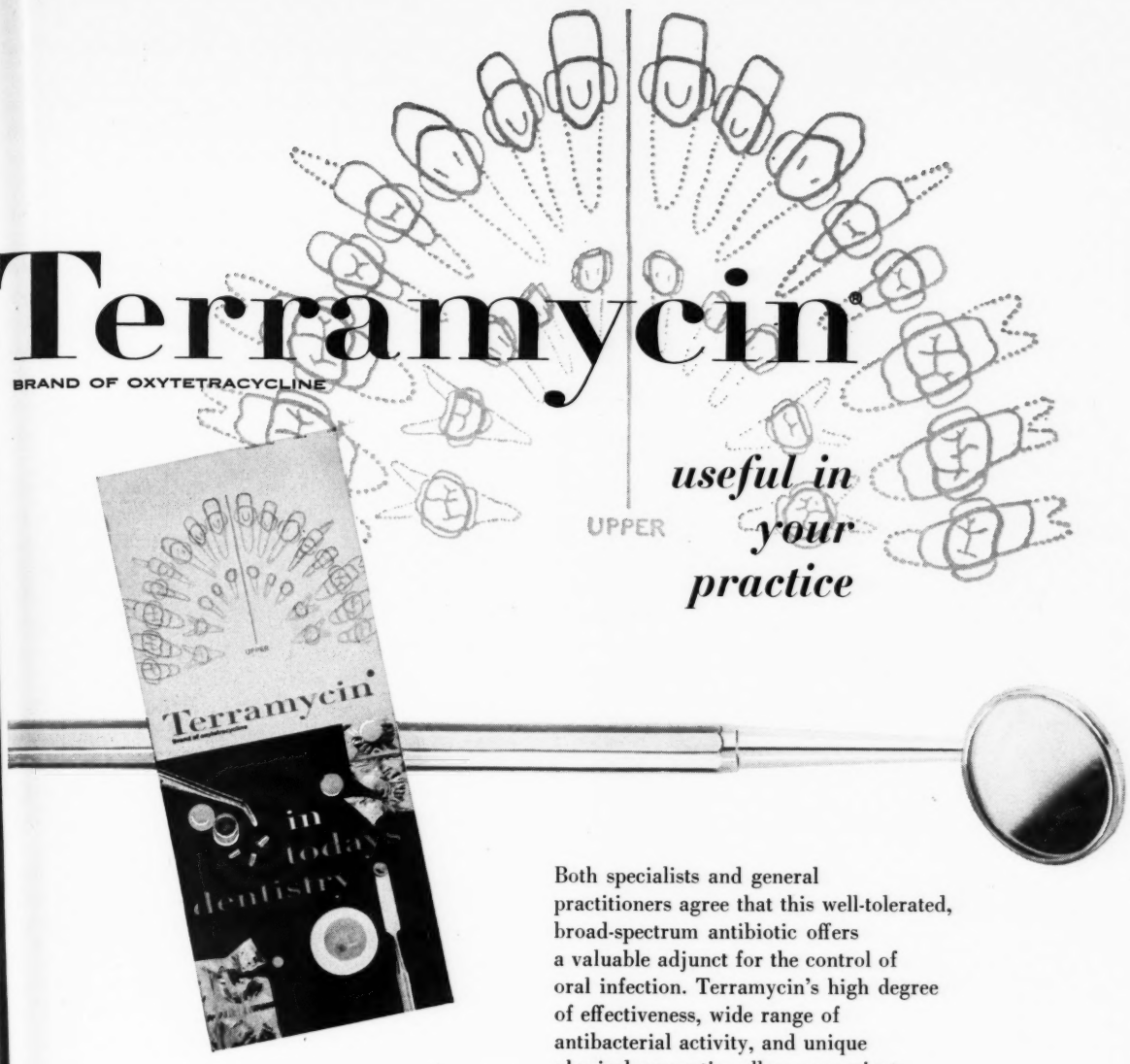
The frequency of common duct stones, 10 to 15 per cent, suggests that more ducts should be explored. Palpation often fails to reveal calculi especially when in the papilla. If such stones cause symptoms, jaundice appears in over one-half of the cases.

When the cystic duct is ligated too far from the common duct, the rem-

Terramycin®

BRAND OF OXYTETRACYCLINE

useful in your practice



A folder, "Terramycin in Today's Dentistry," listing the common conditions encountered in dentistry in which Terramycin is highly useful, and describing the method of treatment and recommended dosage, is now available upon request.

Both specialists and general practitioners agree that this well-tolerated, broad-spectrum antibiotic offers a valuable adjunct for the control of oral infection. Terramycin's high degree of effectiveness, wide range of antibacterial activity, and unique physical properties allow convenient local and systemic application. Convenient-to-use dosage forms for the dental practitioner:

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nant may become dilated and harbor stones. Inflammatory changes or dyskinesia produce symptoms that do not subside with medical management. Removal of the stump and associated nerve plexus brings relief.

Adhesions producing symptoms are almost inevitable after operations in cases with severe inflammation or bile spillage. Roentgenologic studies usually indicate the source and, unless the duct is obstructed, medical management is advisable. Surgical procedures to free adhesions here, as elsewhere in the abdomen, do little more than cause subsequent adhesions.

Diagnostic errors leading to unnecessary surgery are responsible for many postcholecystectomy syndromes. Cholangitis, an inflammation of bile ducts, is best managed with cholagogues and antibiotics. Surgery is indicated only for obstruction. The diagnosis is often difficult and is achieved by elimination of more characteristic disorders. Periodic bilirubinemia with fever is a helpful sign. Most patients with acute cholecystitis can be managed medically without recurrence.

Operations delayed more than forty-eight hours may be complicated by excessive bleeding from fresh adhesions and greater risk of postoperative infection. Infection is usually confined to the gallbladder wall for about one week. Bile then becomes contaminated but usually will clear in six weeks.

A diseased gallbladder is frequently only one manifestation of general biliary tract disturbance. Thorough history and careful study, including roentgenologic examination of the entire gastrointestinal tract and gallbladder with repeated urinalysis and indicated pancreatic and liver function studies will usually obviate diagnostic errors.

Mock, Harry E.: Postcholecystectomy Syndrome, M. Clin. of North America **37**:169-179 (*March*) 1953.

Loss of Taste from Antithyroid Drugs

There is some evidence that the

antithyroid drugs may produce loss of taste. Methylthiouracil and propythiouracil have been known to produce loss of taste.

Methimazole (Topazole) is accepted as an effective antithyroid agent. Clinical studies have shown it to be the most potent compound available today. The high potency of methimazole suggested that it might produce less toxic reactions than other antithyroid drugs, since the required dose would be smaller. Too few cases have been reported to form any statistically accurate conclusions. Early reports, however, seem to indicate that the incidence of toxicity from methimazole is about the same as that from propylthiouracil. Some patients lose not only the sense of taste but also the sense of smell.

Ageusia may develop from several causes. Hysteria is probably the commonest explanation. Peripheral nerve damage can produce ageusia in two ways: (1) by bilateral involvement of the gustatory function of the 7th, 9th, and 10th cranial nerves, and (2) by means of a unilateral facial nerve lesion, which obtunds taste sensation on one side of the tongue, with complete subjective ageusia resulting from hysteria. It is also possible to have complete loss of taste from an oblongatal lesion of the nuclear region of the ninth nerve. In this situation, the roots are usually bilaterally affected; it sometimes is seen in multiple sclerosis and syringomyelia.

Fortunately there is no evidence of damage or inflammation on physical examination. In the majority of patients the senses return within two or three weeks after administration of the drug has been discontinued.

Hallman, Bernard L., and Hurst, J. Willis: Loss of Taste as Toxic Effect of Methimazole (Tapazole) Therapy, JAMA **152**:322 (*May* 23) 1953.

Roentgen Hazards in Pediatrics

Children are apparently more likely than adults to have harmful late sequelae from roentgen exposure. The child's longer life span makes delayed changes more possible. This is especially true during the present era of unavoidable exposure to irradiation in industry, medicine, and warfare.

A child's tolerance to irradiation may be dissipated by early roentgen therapy. Therefore, the pediatrician should advise roentgen procedures only for problems which can be solved by no other means. Some clinicians advocate roentgen exposure diaries.

Films should be used in preference to fluoroscopy for children whenever feasible. A chest film requires only a fraction of the irradiation required for fluoroscopy. Each time a film of the abdomen is made the ovaries receive a small amount of irradiation. Defects of the germ plasm may be manifest later by increase in abortions, premature births or infertility, as well as by the appearance of congenital anomalies in offspring.

In animals irradiation produces senility. The possibility exists that

the amount of x-rays absorbed by the chest during the diagnostic study of a congenitally defective heart may result in premature aging of the heart, thus impairing the already suboptimal function.

Especially during the early years of life, man can apparently acquire from therapeutic and diagnostic roentgen procedures some of the ingredients of carcinogenesis. Elective use of x-radiation for enlarged thymus, cough of virus pneumonia, acne and various skin diseases should not be considered unquestionably safe until more is known about roentgen-ray induced diseases.

Roentgen therapy is justified, however, for treatment of malignant disease in children, though undesirable side effects may appear years later.

Miller, Robert W.: Some Potential Hazards of the Use of Roentgen Rays in Pediatrics, Pediatrics **11**:294-303 (*March*) 1953.

Sympathectomy for Arteriosclerosis

Many patients with arteriosclerosis of the lower extremities are effectively treated with lumbar sympathectomy. The value of this operation is based upon the release of vasospasm of the vascular channels. The unaffected collateral channels can develop to the fullest extent.

The peripheral circulation is usually considerably improved thereby with the following helpful results: (1) eliminating or decreasing pain, (2) increasing warmth and dryness of the affected extremity, and (3) speeding healing of ulcers and subsidence of cellulitis and edema.

When amputation becomes necessary, the stump heals more rapidly after sympathectomy. In many instances the amputation can be accomplished at a lower level than formerly advocated.

A good index to the outcome of sympathectomy is a trial of procaine

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 462 *and* 463)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

lumbar sympathetic block preoperatively. Excellent criteria are the following: (1) elevation of temperature of the extremity, readily detected by the examining hand, (2) dryness of the skin, (3) decrease or elimination of pain, and (4) increase of walking distances without pain or discomfort. These indicate that considerable vasospasm existed and that the collateral vascular bed has elastic potentialities. These signs are a favorable omen of good to excellent results from sympathectomy. The effects obtained by surgery will usually exceed the benefits achieved by blocks. The thorough operation is a more accurate method of interrupting all the sympathetic pathways.

Spinal anesthesia is employed for the surgical procedure. A transverse abdominal incision is made at the level of the umbilicus. The approach is extraperitoneal through a muscle-splitting incision. The sympathetic ganglionated chain is removed from below the first lumbar ganglion to below the fourth. A variety of patterns of size, number of ganglia and braches originating from this section of the chain are seen.

Postoperative complications are not common. They include: (1) ileus, (2) embolus, (3) neuritis, and (4) phlebitis. The mortality rate for the procedure is about 2 per cent. Old age does not interdict surgery.

Favorable results are apparent shortly after surgery. In many instances, the improvement in circulation continues for months thereafter. Any slight increase of the arterial supply to an extremity or digit brings considerable relief of pain and enhances the healing power of the local tissues, thereby diminishing local infections and cellulitis.

Improvement is obtained by lumbar sympathectomy for 88 per cent of patients with peripheral arteriosclerosis. Results are excellent to good for 61 per cent.

Palumbo, Louis T.; Quirin, Lloyd F.; and Conkling, Russell W.: Lumbar Sympathectomy for Peripheral Arteriosclerosis, Ann. Surg. **137**:61-66 (*January*) 1953.

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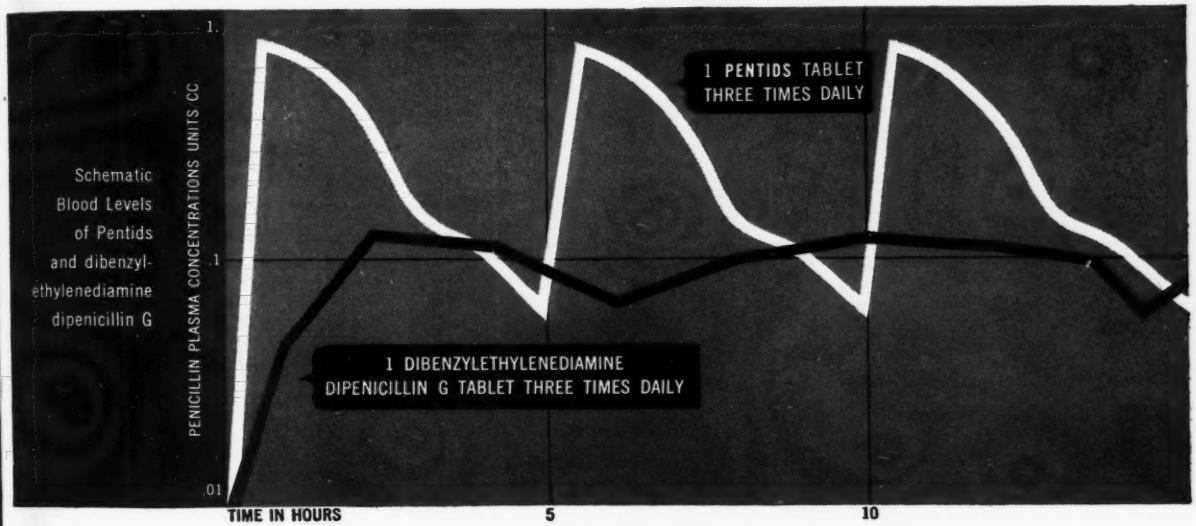

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The Little King

It is easy for us dentists to develop the complex of the "little king." We are one-man producers not subject to control by government or private forces. We are supreme in the little realm of our office. Patients are not disposed to contradict our pontifical utterances. It would be unwise, they feel, to irritate one who has the power to inflict pain. We speak with the tongue of authority in the little world of our dental cubicle.

The feeling of supremacy that we develop in our small domain cannot be carried outside our door. Once we step into the outer world we find that our opinions are not as readily received as they are within our office. People are inclined to argue, to scoff, to protest. It comes as a shock to some of us that the regality of our role is not accepted when we have divested ourselves of our white operating gown and enter the big world outside.

In addition to speaking with dogmatic authority on dental subjects, and often on many others as well, we are inclined to remain silent on some things where the patient prefers us to be more vocal. They do want to know exactly what is the matter with them, how the condition may be corrected, how long it will take, how successful the treatment will be, and what it will cost. If we throw a blanket of big words or of mumbo jumbo over these questions we are certain to alienate patients.

One need not travel far to hear unkind remarks about the air of mystery and silence that the physician has shrouded himself with. The same goes in less degree for the dentist. A good many physicians and dentists reflect an attitude that patients are too ignorant to be told the simple facts of

"I have in my office a booklet published by you in 1940, called 'Visual Education in Dentistry.' I have used this booklet so frequently that it is completely worn out. Can you tell me where I can get another like it or similar to it? I shall be very grateful for this information." --Missouri

"Please send ten copies of 'Visual Education in Dentistry.' I place these booklets in the reception room and many mothers request copies. I believe you would have a heavy demand if this idea were promoted." --Indiana

"Last week I received your booklet, 'Visual Education in Dentistry.' It is the best work on this subject that I have ever seen. You certainly are to be congratulated. Next week I am giving part of my time to a group health program and I would like to have two or three more copies." --Maryland

"Please send a copy of 'Visual Education in Dentistry.' Ours is so reception-room-used that a replacement is necessary." --Illinois

"'Visual Education in Dentistry' has proved popular here at the School of Medicine." --New York

"Will you please send me a copy of your very fine booklet, 'Visual Education in Dentistry.' It was recommended to us by Professional Budget Plan." --Minnesota

"Kindly send me several more copies of 'Visual Education in Dentistry' for the education of the back-woods people I serve in my country office. A few copies of this book, given to teachers, will do a great deal of good. These charts will do more than books to educate the layman." --New York

"Will you please send me the booklet, 'Visual Education in Dentistry,' designed to explain dentistry to patients? I have very religiously consulted this booklet at the office of my dentist, and find it so instructive that I believe it should be a requisite in my home."--California

MOST DENTISTS ORDER TWO COPIES

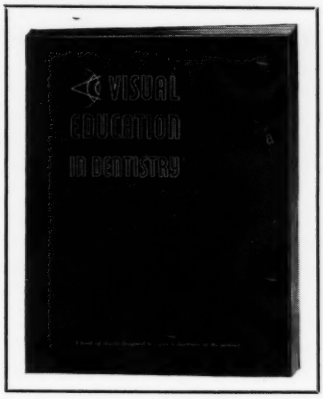
. . . one for the reception room
. . . one for use at the chair

Other Recent Comments

● "I recently saw a copy of Visual Education in Dentistry and thought it to be quite interesting. I am opening my office February 3 and I believe that such a booklet would be valuable in showing my patients various phases of dental pathology, and efficacies of proper dental restorative work." **Chicago.**

● "Please send us two of your booklets on Visual Education in Dentistry. We find it very important in our office. The one we have now is in shreds." **Milwaukee.**

● "Please send me your booklet, Visual Education in Dentistry. I have the ninth edition and have about worn it out. I couldn't do without it." **Muskogee.**



● "I received a copy of Visual Education in Dentistry today and am very pleased with it. Several of the illustrations are just what I have been looking for. I intend to frame some. Since this would destroy the book would it be possible to get two more copies?" **Randolph.**

● "I have seen your booklet Visual Education in Dentistry and have found much of value in it. Are you still publishing it? If so, send me the price so that I can order it." **Hiawatha.**

● "We think your Visual Education in Dentistry is splendid. Please send us two more copies. We could use them to great advantage. "**Chelsea.**

● "Several weeks ago I received a copy of Visual Education in Dentistry. Would it be possible for me to have another copy? It has had much use in my waiting room and one more would be helpful." **Auburn.**

It is a fact that more and more dentists are ordering two copies of *Visual Education in Dentistry*—one for use in the reception room and one for use at the chair. And more and more dentists are referring to these charts as the most ethical and practical available for use in patient-education programs.

In addition we are receiving an increasing number of orders for the complete series from school teachers in the elementary and high schools—teachers who are finding *Visual Education in Dentistry* a valuable aid in their dental health programs. One practitioner in Indiana is giving the booklet to mothers who request it. *He believes that idea should be expanded.* The price is only $1.50 to Dental Digest subscribers. Here is real potential value at low cost. We refer the special combination offer (see coupon) to nonsubscribers. Why not send your order immediately?

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life. Actually, many patients are better educated, more widely cultured, and concerned in bigger affairs than the physician or dentist who is treating them. People resent being considered ignoramuses or as inferiors who are too dumb to be told about their disease states and their treatment.

These facts are of concern to public relations counsellors and should be of interest to professional men. Not long ago a brave surgeon appeared before the American Psychiatric Association and said that "many surgeons fail to tell the patient what is going on, either before or after an operation. The patient satisfies his natural curiosity by questioning attendants or relatives and often as not the information he gets is inaccurate and a source of great worry. The age-old tradition of secrecy is a relic of the mystery flaunted by the medicine man."

Public relations counsellors are so concerned with this subject that one of them (Gerry Swinehart, President, Carl Byoir & Associates, Inc.) gave a talk on "the perils of misinformation." In part he said:

"The average businessman is so engrossed with daily problems of operation that he finds little time for concern with the broader problems of public reaction. He is so emotionally involved with the details of management, merchandising, personnel, finance, legislation and other specific factors that he just never gets around to studying the opinions and attitudes of the various groups or publics whose good will is essential to his long range prosperity and, in these days, even survival.

"Over a period of years, we have found that all industries suffer from large overdoses of egocentricity. Representatives of many of them have told us that people did not understand them or appreciate their contributions to the general good.

"Each felt his problem was unique. Yet, surprisingly, each told the same story.

"Each suffered, as you are suffering, because of the difficulty of competing in the market place of ideas without a comprehensive, coordinated plan to get the story of the entire industry to the people.

"I'll say it again. You need to do as good a job of *selling your industry* as you do your products.

"You need to let the American public know you are, what you are, why you are and how you operate for the common good. It's possible in these days to be a great success at the cash register and go broke in the legislative hall."

Mr. Swinehart is right when he says that "all industries suffer from large overdoses of egocentricity." That goes double for the vestigial remnants of the medicine man who is found strutting as the "little king" in many of our medical and dental offices.

"The Practice Builder—Confidential"

A woman operated a bawdy house down along the river in the small town where I spent my boyhood. If she or "the inmates of the disorderly

A dentist tells us:

"I never knew what it was to cast fine detail in abutments or pontics until I used B-2".

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house" (as the newspapers of the day delicately expressed it) had dental problems, their plight was unknown to me, a mere newsboy. If these women had been compelled to enter into the streets in the bright sunlight to seek dental care, I trust that they would have found an understanding dentist who owned a copy of "The Practice Builder—Confidential."

This book was written in 1897 by Charles R. Hambly, D.D.S., for "those members of the dental profession whose success has been only average or less than average." The book went into 12 editions. That gives an idea of its popularity among the dentists at the turn of the century. There is no phase of the dentist's life that Doctor Hambly does not explore. From time to time in this column we will present some of his gems on courtship, marriage, beer drinking, the hiring and care of lady assistants, patronage, and such other subjects as are foreign to the dentist of 1954.

First off, though, we will let you know the method of treatment that Hambly suggested to his colleagues for the "fast women" who came seeking dental care:

"When fast women apply to you for work, and it is your custom to work for them, be sure and maintain a courteous but dignified demeanor toward them. Usually they are accompanied by one other member of the house, to wait for them; the one who waits is likely to bring a *Police Gazette*, or *Standard*, or some other flashy literature with her, to while away the time.

"In making an appointment with a member of this class it will be to the practitioner's best interest to make the appointment for a time when he has made no other appointments during that half of the day, and charge the person accordingly; for if an appointment is made for the same forenoon with a lady who is a member of the better grade of society, she is likely, especially in the smaller towns, to know that the women are of the demi-monde, and may take offence; at least she has a right to show her displeasure at being given an appointment so close to theirs.

"Do not under any circumstances make any other than the most casual remarks, and only those that relate strictly to the work being done. It takes very little encouragement for

these persons to become very friendly, and to engage in banter that is more or less discreditable. They laugh loud and long when a remark is made that is more or less funny, and if the dentist engages with them in talk, and a joke is passed, they will laugh in hearty appreciation of their own wit, and just as likely as not the door will open while they are yet in the midst of their laughing, and in will walk one of the most fashionable patrons, or perhaps it will be the young lady whom he most admires.

"He will turn as red as fire, too; the laughing will stop as if it had been cut short, the dentist will stand before his patient the most confused individual imaginable. Perhaps the young lady will say to herself, 'Dr. Blank seems to be very well acquainted with those women. I don't think I'll go up to his office again without Mamma.'

"Or it may be his wife has just dropped in for a moment; she will see the persons in the office, will note the look of confusion on her husband's face, and will mentally decide to drop into the office from time to time just to see how things are going.

"If he ever goes past their house, he is likely to hear one of them call to another, 'Say, Pearl, Doc Blank just went past.'

"There is danger of getting the name of doing all the work of this class of people, and this does no dentist any good. It is harmful to his practice to have it whispered about that he does the work for all the fast women in the town."

I am perturbed about Hambly's concern over the remark made by the unidentified inmate when the dentist passed the house of ill fame: "Say, Pearl, Doc Blank just went past." Could not this virtuous passing by

(*Continued on page* 480)

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Fig. 1

Fig. 2

Fig 3

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In your ORAL HYGIENE this month

How to Make Friends in Dental Practice

Every young dentist entering practice—and every older one moving to a new locality—would be wise to clip Doctor Gerald Jay Steinberg's list of practice-building aids and follow his practical hints on "How to Make Friends in Dental Practice."

★ ★ ★

"Eyestrain is perhaps the main occupational disease of dentists. In a poll of 2,400 dentists, 76% were aware of this and expressed concern over the gradual weakening of their sight."

Doctor R. M. Grainger and Doctor E. Mastromatteo have written a most important article discussing the dentist's need of proper lighting, not only in the operatory but in the laboratory and other rooms of the dental office. A chart compiled by The Committee on Lighting in Dental Offices of the Illuminating Engineering Society is reproduced and recommended as a guide in correcting faulty and insufficient sources of light.

★ ★ ★

A good article to clip and save to re-read when you need it, is Stuart Covington's "Rehearsing an Office Remodeling Pays Off." The dentist who follows the advice given in this article may save time, money, and nervous strain—and expedite the work of the contractors.

★ ★ ★

"Can Your Practice Afford a Dental Hygienist?"—or perhaps the question should be asked the other way around, "Can your practice afford to be *without* a dental hygienist?" Charlotte Fried, a dental hygienist herself, explains how today's trained women can increase not only the dentist's efficiency, but his actual practice volume.

★ ★ ★

In North Carolina, school busses bring the children to the pedodontics clinic of the University of North Carolina's School of Dentistry. Here dental students study full-mouth roentgenograms, make examinations, and give both emergency treatment and operative service. Instigator of the successful plan is Doctor John Charles Brauer, dean of the dental school. Tom Neal, Jr. tells the story.

★ ★ ★

Have you day-dreamed of the time you could in good conscience demand a four-figure fee for your service? Doctor A. Randall Ruskin did—and tells the amusing tale of what happened when his dream almost came true. You will enjoy the philosophical humor of "My One Big Fee."

★ ★ ★

"To Err Is Humor," explains Doctor Keith D. Sutherland, as he tells how the tongue-twisting of a master of ceremonies gave him a rather peculiar classification in the service club he was asked to join.

★ ★ ★

You'll find a great deal of diversified—and highly interesting—information in the regular monthly departments, too. Don't miss them in the October issue.

Contra-Angles

(*Continued from page* 477)

without a lustful glance seem to be a fine reflection of this dentist's noble character? Treat these women he will to relieve their pain, suffer the indignity of the flushed face when the sterling young society woman catches him talking and laughing with these women in the dental office—but walk resolutely past their door he will, never to pass through this portal of degradation. Horatio Alger's boys could have done no better.

—E. J. R.

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